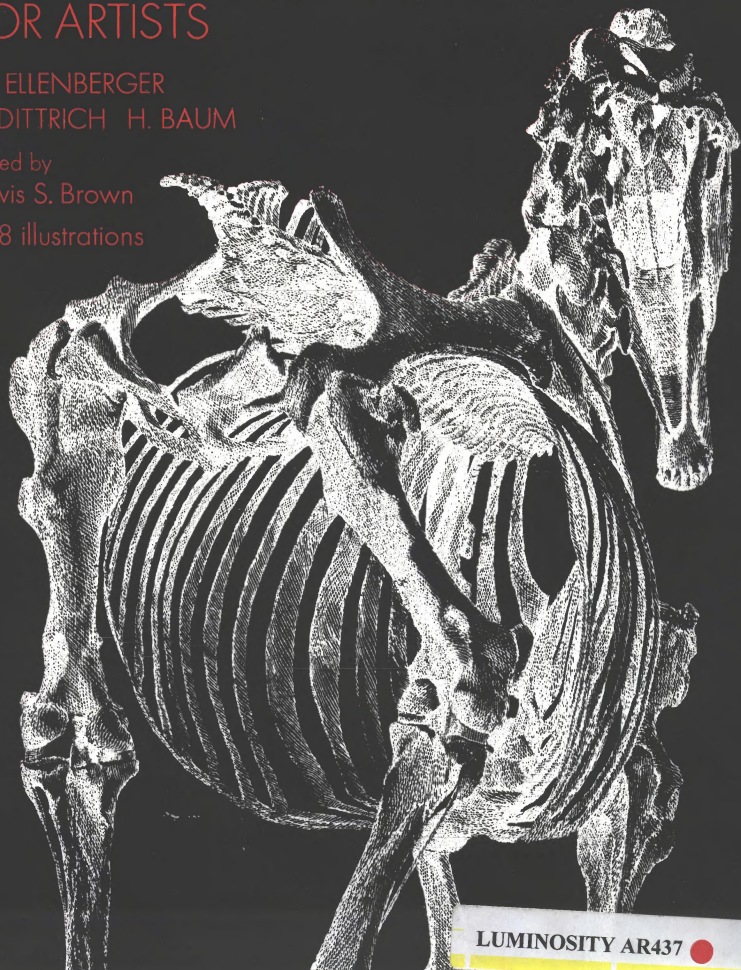


# AN ATLAS OF ANIMAL ANATOMY FOR ARTISTS

W. ELLENBERGER  
H. DITTRICH H. BAUM

Edited by  
Lewis S. Brown  
288 illustrations



LUMINOSITY AR437

AN ATLAS OF  
ANIMAL ANATOMY  
FOR ARTISTS

BY W. ELLENBERGER, H. BAUM AND  
H. DITTRICH

*Second Revised and Expanded Edition*

*Edited by LEWIS S. BROWN, Exhibition Department, American Museum of Natural History*

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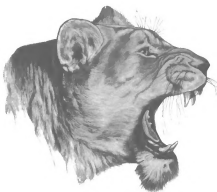
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## Preface to Second Revised American Edition

I have undertaken with a glad heart the preparation of this new edition of the incomparable Ellenberger, Baum, and Ditttrich *ATLAS OF ANIMAL ANATOMY FOR ARTISTS*. When Dover Publications first approached me, they told me they intended to enrich the book by the addition of plates by George Stubbs and others, as well as a bibliography to suggest further study. I appreciate the freedom they have given me in my efforts to carry out those wishes.

Our first edition contained all of the plates from the original Ellenberger work, published in 1901 in five volumes. Only a part of the German text was omitted, most of it more technical than is generally warranted by the needs of artists. The real message is contained in the plates themselves. It is a larger message than may be apparent at first, including, as it does, the directive to compare the different forms as well as to study them separately. The choice of the horse, the dog, the cow, and the lioness was not an accident. Although all are of the class *Mammalia*, each is a member of a different order. The horse is of the order *Perissodactyla* (*perissos*—odd, *dactylos*—toe), an animal having an odd number of toes. It includes the zebra, the tapir, and the rhinoceros as well as the horse. The cow belongs to a larger order, *Artiodactyla* (*artios*—even, *dactylos*—toe). Other animals of this order are the pig, the camel, the antelope, the goat, the deer, the giraffe, and the hippopotamus, to mention a few. The lioness and the dog are of the order *Carnivora* (*carno*—flesh, *vorare*, to eat). The first two orders, you will notice, are based on the development of the legs while the third is based on the teeth.

In selecting material to expand this edition, I have kept in mind this comparative aspect. The quality of the Ellenberger plates is so fine that it has not been easy to find even a few more, strictly anatomical, studies from which could be made selections worthy to stand beside them. The engravings of the horse by George Stubbs are taken from his *ANATOMY OF THE HORSE*, published in 1776. George Stubbs has taken his place among England's great sporting artists. Although these anatomical studies were made under conditions that would be considered almost impossible today, his results speak for themselves. The  $\frac{3}{4}$  view and the rear view form an excellent supplement to the Ellenberger plates on the horse. In the original work, numbered and lettered tracings accompany the anatomical plates to designate the names of the bones and muscles. The functions of the muscles were not understood in Stubbs' day as they are now, so



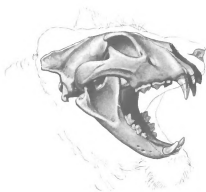
that much of the anatomical description does not agree with later (and present-day) descriptions as found in Ellenberger. To include them would probably be more confusing than helpful to the student.

The four plates on the anatomy of the cat are selected from the *ANATOMIE DESCRIPTIVE ET COMPARATIVE DU CHAT* by Hercole Straus-Durckheim, published in 1845. The same objection to the designations of the muscle names exists as in the case of Stubbs. Consequently, no names are given. The Cuvier plates are from *ANATOMIE COMPARÉE* by George Cuvier and M. Laurillard, published in 1849. This is a giant volume which contains many more plates of equal merit, but the ones selected allow us to extend our study of comparisons to four more orders of mammals. The hare and the flying squirrel are of the order *Rodentia* (*rodere*—to gnaw); the rat kangaroo, of the order *Marsupialia* (*marsupium*—pouch); the bat, of the order *Chiroptera* (*chiro*—hand, *pteron*—wing). The monkey, like man, belongs to the order *Primates* (*primus*—first). Although the seal, because of its teeth, is classed with the carnivores, it is worth including because it is a mammal that has adapted itself to the sea. The flying squirrel is a link between the earth and the air while the bat, as much a mammal as the rest, has made itself entirely independent of the ground.

The amazing thing to me about all this is how much alike these animals are. The parts which they have in common far exceed those which each has alone. All are built around much the same skeletons. It is easy to locate a scapula, an elbow, a wrist on every one although the wrist on a monkey or man, may be called a knee on the horse or the cow. That is merely a confusion of terms, not a difference in structure. If one cared to look carefully enough, he would find that the attachments of the muscles in the different animals are the same. True, the sizes and shapes of the bones and muscles differ, and some of each have been discarded when no longer needed. The bones and muscles in the feet of horses are simpler and are easier to understand than those of most of the rest.

This leads us naturally into the subject of evolution. All the mammals shown in this book, or in any other for that matter, had a common ancestor which we are convinced lived in the closing ages of the huge reptilian dinosaurs. From it have arisen such different forms as the bat, the horse, the whale; a small animal that flies through the air, a large animal that runs across the land, and a huge animal that never leaves the water. Of all the animals included in this book, the rat kangaroo most resembles the common ancestor form.

Ernest Thomson Seton in his book, *ANIMAL ANATOMY FOR ARTISTS*, instructed his readers to consider the dog as the average mammal and to make it a first study from which to branch out into the study of other forms. This is a sensible suggestion as the dog is not as specialized as, for instance, the horse. However, for a number of reasons, I, myself, did my initial study of animal anatomy on the horse. It is, first of all, one of the simplest animals in structure. It is highly specialized with but a single toe on each foot and a fusion of bones in the legs. It has specialized joints which greatly limit the possible action. Secondly, there is a comparative wealth of easily accessible material on it. In addition, there are several



good comparisons of the horse form to the human form which allow the student readily to use what knowledge of human anatomy he may already possess to understand the quadrupedal form. For these reasons, I have included more material in the appendix and in the bibliography on the horse than on any other animal.

Lastly, I have inserted a trifle on the sizes of the animals shown. I have added from the original edition those measurements by Ellenberger which pertain to horses of a kind to be found in this country at the present time. All the measurements are given in feet and inches.

## A NOTE ON STRUCTURE

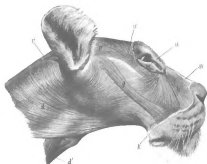
All of the plates in this volume, designed primarily for the artist, deal only with the bones and muscles. In the Ellenberger, Baum, and Dittrich plates, a uniformity of part designations exists. For instance, the last muscle shown in the side view of the body of the horse, the dog, the lioness, the cow, the goat, the stag, and the roe is the *M. Semitendinosus*, and in each case designated by the small letter *r*. With few exceptions, numbers are used for the bones and letters for the muscles.

The animals shown have in common a skeleton framework comprised of a series of bones joined together and placed at certain definite angles to each other. At the joints, the bones are held together by ligaments. A ligament is a band of white fibrous tissue, pliant and flexible, to allow movement at the joint, but tough, strong, and inelastic. It does not contract as does a muscle. Between the bones at the joints is a padding or cushion of cartilage, a pearly white, gristly substance. It is also found in passages which must be kept open such as the nostrils and the ears.

The muscles are the motors of the body which cause movement. They are formed by bundles of reddish fibers endowed with the property of contractability. The muscles are connected to the bones, cartilage, or ligaments either directly or by tendons or aponeuroses. Tendons are white, glistening, fibrous cords varying in thickness and in length, sometimes round, sometimes long and flattened, of considerable strength and slight elasticity. Aponeuroses are fibrous membranes similar in structure to tendons. Tendons and aponeuroses are connected to the muscles at one end and to the movable bones, cartilage, and ligaments at the other.

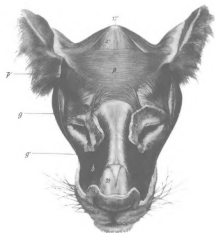
Muscles act in pairs. For every muscle pulling in one direction, there must be a corresponding one pulling in the opposite direction. A muscle on the left side of the body is matched by a similar one on the right side.

In Plate 3 of the horse No. 1, the scapula, forms slightly more than a right angle with No. 4, the humerus, which joins it. If these two bones move toward each other, the angle decreases. The muscles causing this action are called flexors. If the scapula and humerus straighten, the muscles causing this would be called extensors. However, the same muscle which helped flex the scapula



and humerus might extend the humerus and radius. In one action it would be called a flexor, in the other, an extensor. This dual function of some muscles, with their several attachments, creates a difficulty in naming them and describing their functions. Adduction and abduction refer to the position of the bone or bones in relation to the center line of the body. Adduction means toward the center-line; abduction means away from the center-line.

LEWIS S. BROWN



## The Horse



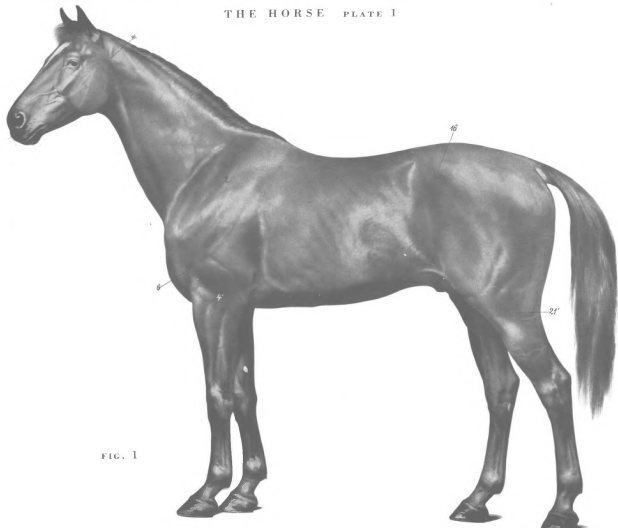


FIG. 1

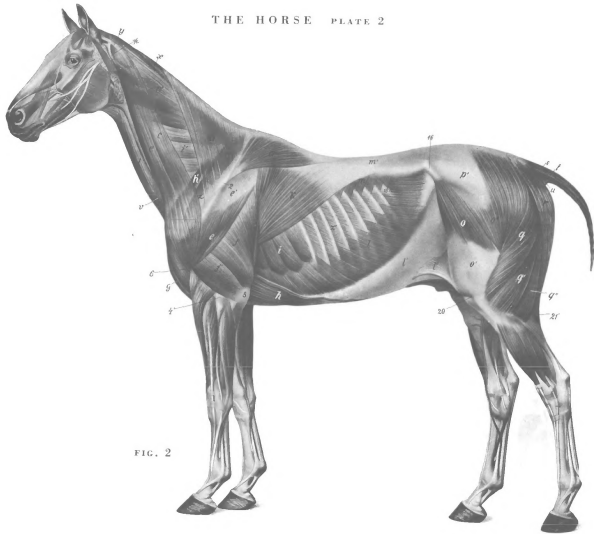


FIG. 2

## THE HORSE PLATE 3

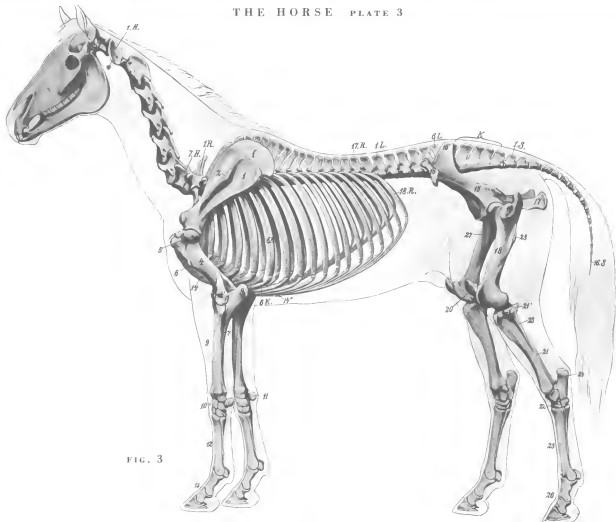


FIG. 3

FIGURES 4 5 6

- |   |   |                                |
|---|---|--------------------------------|
| a— <i>M. trapezius</i>                                    | 1R—1st rib                                | 12—Metacarpus                  |
| c, c'— <i>M. cleidomastoideus</i>                         | 1—Scapula                                 | 13—Phalanges of anterior digit |
| d— <i>M. sternomandibularis</i>                           | 1'—Cartilago scapulae                     | 14—Sternum                     |
| f, f'— <i>Caput longum et laterale tricipitis brachii</i> | 2—Spina scapulae                          | 14'—Cariniform cartilage       |
| g—Clavicular part of <i>M. pectoralis major</i>           | 4—Humerus                                 | 29— <i>M. omohyoideus</i>      |
| g'—Sternal part of <i>M. pectoralis major</i>             | 4'—External epicondyle of humerus         | 30— <i>M. sternohyoideus</i>   |
| h'—Scapular part of <i>M. pectoralis minor</i>            | 5—External tuberosity of humerus          | 31— <i>V. jugularis</i>        |
| v—Cervical subcutaneous muscle, (cervical panniculus)     | 6—Deltoid tuberosity of humerus (Rotator) | 32—Cutaneous vein              |
| z— <i>M. supraspinatus</i>                                | 9—Radius                                  |                                |
|   | 10—Carpus                                 |                                |



FIG. 4



FIG. 5



FIG. 6

## FIGURES 7 8 9

a—Inner terminal tendon of *M. tibialis anterior*  
 d—*M. extensor digitorum pedis lateralis*  
 e—*M. flexor digitorum profundus*  
 e'—Deep flexor tendon  
 e''—*M. tibialis posterior*  
 f—Terminal part of the united *Mm. gastrocnemii*  
 f'—*Tendo achillis*  
 f''—*M. soleus*  
 g—Superficial flexor tendon  
 h—*M. interosseus medius*  
 m—*M. flexor digitorum pedis longus*  
 o—*M. tensor fasciae latae*  
 o''—*M. gluteus maximus*  
 p'—Fascia glutea  
 q, q', q''—*M. biceps femoris*  
 r—*M. semitendinosus*

s, t—Muscles of the tail  
 v—*M. semimembranosus*  
 w—*M. gracilis*  
 K—Sacrum  
 1 S—1st caudal vertebra  
 16 S—16th caudal vertebra  
 15—Ossa pelvis  
 16—Tuber coxae  
 16'—Tuber sacrale  
 17—Tuber ischii  
 18—Femur  
 18'—External condyle of the femur  
 19—Trochanter major of the femur  
 20—Patella  
 21—Tibia  
 21'—External condyle of the tibia  
 22—Tarsus

23—Fibula  
 24—Tuber calcanei  
 25—Large cannon bone (3rd metatarsal bone)  
 25'—External small cannon or splint bone  
       (4th metatarsal bone)  
 25''—Capitulum  
 27—Internal trochanter of the femur  
 28—External trochanter of the femur  
 29—Sesamoid bones of the 1st digital joint  
 30—Phalanx prima  
 31—Phalanx secunda  
 32—Phalanx tertia  
 33—Sesamoid bone of the 3rd digital joint  
 34—Anus  
 35—Vulva



FIG. 7

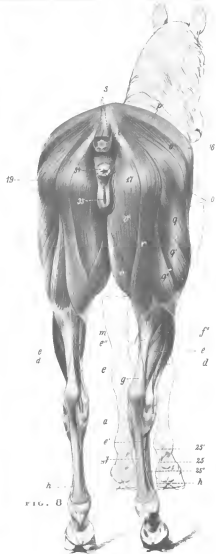


FIG. 8

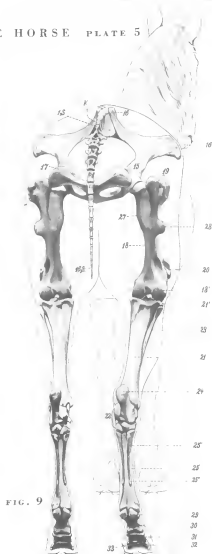


FIG. 9

## FIGURES 10 11 12

- a, a'—*M. trapezius*  
 c—*M. cleidomastoideus*  
 e'—Tendon of origin of the *M. deltoideus*  
 f—*Caput longum tricipitis brachii*  
 i'—Cervical part of the *M. serratus anterior*  
 k—*M. latissimus dorsi*  
 l—Dorsal part of the *M. oblique abdominis externus*  
 m—*M. serratus posterior*  
 m'—Lumbo-dorsal fascia  
 o''—*M. gluteus maximus*  
 p—*M. gluteus medius*  
 p'—Fascia glutea  
 q—Vertebral head of the *M. biceps femoris*  
 r—Vertebral head of the *M. semitendinosus*  
 s, t—Short and long levators of the tail  
 w—*M. splenius*  
 1 H—1st cervical vertebra (*Atlas*)  
 7 H—7th cervical vertebra  
 1 L—1st lumbar vertebra  
 6 L—6th lumbar vertebra  
 K—Sacrum  
 1 R—1st thoracic (dorsal) vertebra  
 6 R—6th rib  
 17 R—17 thoracic (dorsal) vertebra  
 18 R—18th rib  
 1 S—1st caudal vertebra  
 \*—Ala border of the atlas  
 1—Scapula  
 1'—Cartilago scapulae  
 2—Spina scapulae  
 4—Humerus  
 5—External tuberosity  
 6—Deltoid tuberosity of the humerus  
 8—Olecranon  
 15—Pelvis  
 16—Tuber coxae  
 16'—Tuber sacrale  
 17—Tuber ischii  
 18—Os femoris  
 19—Trochanter major of the femur  
 24—Tuber calcanei  
 27—Os occipitale  
 27'—External occipital tuberosity  
 28—Os parietale  
 30—Transverse processes of the lumbar vertebrae  
 36—*M. longissimus dorsi*



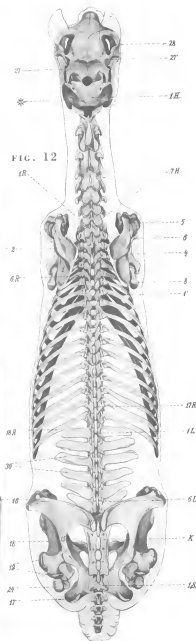
FIG. 10



FIG. 11



FIG. 12



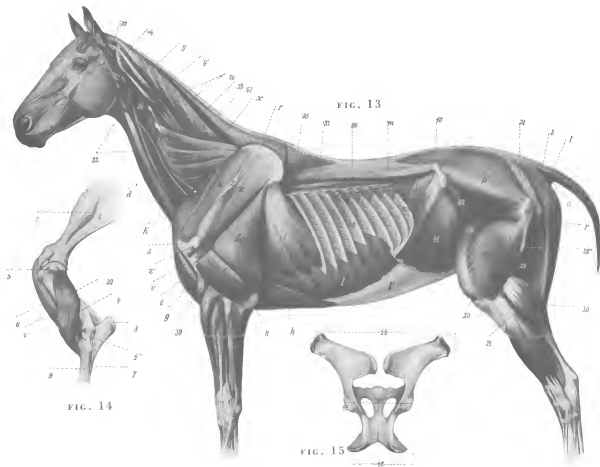
## THE HORSE - PLATE 7

## FIGURES 13 14 15

d—*M. sternomandibularis*  
 f, f'—*M. triceps brachii*  
 g—Anterior portion of the *M. pectoralis major*  
 h—Posterior portions of the *M. pectoralis minor*  
 h'—Scapular portion of the *M. pectoralis minor*  
 i—Thoracic portion of the *M. serratus anterior*  
 i'—Cervical portion of the *M. serratus nuchae*  
 l—Part of the *M. obliquus abdominis externus*  
 l'—Tendon of the *M. obliquus abdominis externus*  
 m—*M. serratus posterior*  
 p—*M. gluteus medius*  
 r—*M. semitendinosus*  
 s, t—Short and long levators of the tail  
 u—Abductor muscle of the tail  
 v'—*M. biceps brachii*  
 x—*M. rhomboideus*  
 y—*M. longissimus capitis*  
 y'—*M. longissimus atlantis*  
 z—*M. supraspinatus*  
 z', z''—*M. infraspinatus*  
 18 R—18th rib

\*—Border of the atlas  
 1—Scapula  
 1'—Cartilago scapulae  
 2—Spina scapulae  
 4—Humerus  
 4''—External lateral ligament of the elbow joint  
 5—External tuberosity of the humerus  
 6—Deltoid tuberosity of the humerus  
 7—Ulna  
 8—Olecranon  
 9—Radius  
 16—Tuber coxae  
 19—Trochanter major of the femur  
 20—Depression over the lower part of the patella  
 21'—External condyle of the tibia  
 26—Articular processes of the cervical vertebrae  
 27—Depressor muscle of the auricle  
 28, 28'—*M. quadriceps femoris*  
 28''—Trochanter tertius femoris  
 29—A part of the *M. semimembranosus*  
 30—*Mm. gastrocnemii*  
 31—Posterior part of the sacro-sciatic ligament

32—*M. omohyoideus*  
 33—*M. complexus*  
 34—*M. longus capitis*  
 35—*M. spinalis et semispinalis dorsi et cervicis*  
 36—*M. longissimus dorsi*  
 37—*M. iliocostalis*  
 38—*M. teres minor*  
 39—*M. brachialis internus*  
 40—*M. intercostalis*  
 41—*M. obliquus abdominis internus*  
 42—*M. iliacus*  
 43—*M. transversus abdominis*  
 44—Dotted line indicating the distance between the two external angles of the ilium, upper view of the pelvis of a stallion  
 45—Dotted line indicating the distances between the two hip joints, upper view of the pelvis of a stallion  
 46—Dotted line indicating the distance between the tuberosities of the ischia, upper view of the pelvis of a stallion  
 47—Cervical ligament cord



## THE HORSE - PLATE 8

## FIGURES 16 17 18 19

c—Lower marginal part of the *M. mustoido-humeralis*

d—*M. sternomandibularis* s. *sternocapalicus*

g—Anterior portion of the *M. pectoralis major*

h—Posterior portion of the *M. pectoralis major*

i—Teeth of origin of the *M. serratus magnus*

k—Marginal part of the *M. latissimus dorsi*

l—*M. obliquus abdominis externus*

l'—Aponeurosis of the *M. obliquus abdominis externus*

l''—The fold of the groin caused by the *M. panniculus carnosus*

r—End of the *M. semitendinosus*

s'—Flexor muscles of the tail

t—*M. pectineus*

u—End of the *M. iliopsoas*

v—End of the *M. semimembranosus*

v'—Cervical subcutaneous muscle (cervical panniculus)

w—*M. gracilis*

x—*M. sartorius*

y, y'—*M. quadriceps femoris*

z, z'—*Mm. adductores femoris*

1 H—1st cervical vertebra

7 H—7th cervical vertebra

1 R—1st thoracic (dorsal) vertebra

\*—Edge of the atlas

1—Scapula

1'—Cartilago scapulae

2—Juncular part of the ligamentum nuchae

3—W ide section of the ligamentum nuchae

4—Lamellar part of the ligamentum nuchae

8—Olecranon

9—Zygomatic arch

10—Supraorbital depression (temporal fossa)

12—Orbital arch

14—Lower edge of the sternum

14'—Manubrium sterni

19—Orbital cavity

20—Patella

27—Zygomatic or facial crest

29—End of the *M. omohyoideus*

30—End of the *M. sternohyoideus*

51—Upper eyelid with its eyelashes

51'—Lower eyelid

52—Cartilago nictitans

53—Caruncula lacrimalis

54—Lacus lacrimalis

55, 55'—Eyeball

56—Pupil

56'—Corpora nigra

57—Pigmented marginal band along the junction of the sclera with the cornea

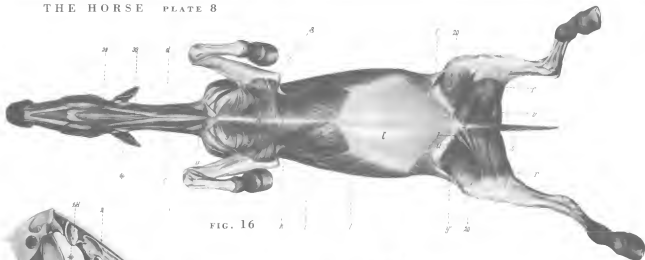


FIG. 16

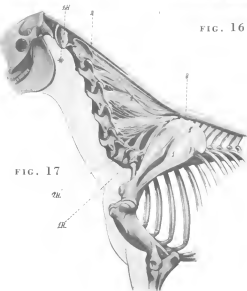


FIG. 17

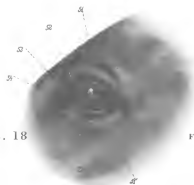


FIG. 18

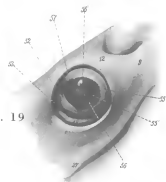


FIG. 19

## THE HORSE - PLATES 9 10

## FIGURES 20 21 22 23 24 25 26 27 28 29

a—*M. levator labii sup. propius*  
 a'—Uniting tendon  
 b—*M. levator labii sup. alaeque nasi*  
 c—Origin of the *M. sterno-cleidomastoideus*  
 d—End of the *M. sterno-mandibularis*  
 d'—Tendon at the end of *M. sterno-mandibularis*  
 e—Terminal parts of the combined *Mm. omo-hyoidei et sterno-hyoidei*  
 f—*M. caninus s. pyramidalis nasi*  
 g—*M. zygomaticus major*  
 h—*M. buccinator*  
 i—*M. quadratus labii inferioris*  
 k—*M. orbicularis oris*  
 l—*M. dilatator nasi*  
 m—*M. masseter*  
 n—Depressor of the auricle  
 o—External adductor of the auricle  
 o'—Inferior adductor of the auricle  
 o''—Superior adductor of the auricle  
 p, p'—*M. scutularis*  
 q—Abductor of the auricle  
 r—Levator of the auricle  
 s—*M. obliquus capitis superior*  
 t—*M. splenius*  
 u—*M. corrugator supercilii*  
 v—*M. biventer maxillae; M. digastricus*  
 x—*M. transversus nasi*  
 y—Tendon of the *M. longissimus capitis et atlantis*

\*—Ala border of atlas  
 1—Auricle or cartilage of the ear  
 2—External or posterior edge of auricle  
 3—Internal or anterior edge of auricle  
 4—Incisura intertragica  
 5—Base of auricle  
 6—Styloid process of auricle  
 7—Cartilago annularis  
 8—Scutellum  
 9—Arcus zygomaticus  
 10—Temporal fossa  
 11—Proc. coronoides of the lower jawbone  
 12—Orbital arch  
 13—Os occipitale  
 13'—Crest of os occipitale  
 13''—Angular process of os occipitale  
 13'''—Condyle of the os occipitale  
 14—Os parietale  
 14'—Crest of the os parietale  
 15—Os frontale  
 15'—Frontal crests  
 16—Os temporale  
 17—Meatus acusticus externus  
 18—Temporo-maxillary joint  
 19—Orbita  
 20—Os jugale  
 21—Os lacrimale  
 22—Os nasale  
 23—Os intermaxillare s. incisivum

24—Upper incisor teeth  
 25—Upper canine tooth  
 26—Os maxillare sup.  
 27—Zygomatic or facial crest  
 28'—Body of the lower jawbone  
 29—Lower canine tooth, exposed from the alveolus  
 29'—Incisor tooth, exposed from the alveolus  
 30—Branch of the lower jaw  
 30'—Angle of the lower jaw  
 31—Condyle process of the lower jaw  
 32—1st cervical vertebra (Atlas)  
 33—2nd cervical vertebra  
 34—Lateral cartilage of the nose  
 35, 35'—The X shaped or alar cartilage of the nose  
 37—*V. maxillaris externa*  
 38—*V. jugularis*  
 39—*V. facialis*  
 40—Ductus parotidis  
 41—Transverse facial vein  
 42—Masseteric vein  
 43—Facial nerve  
 44—Glandula parotis  
 45—Chin  
 46—Enamel ridge of the incisor tooth as seen from the masticatory surface  
 47—Mark or cup characteristic of the incisor tooth

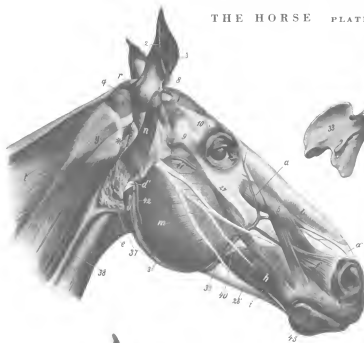


FIG. 20

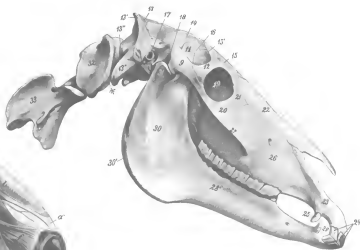


FIG. 21



FIG. 22

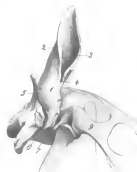


FIG. 23

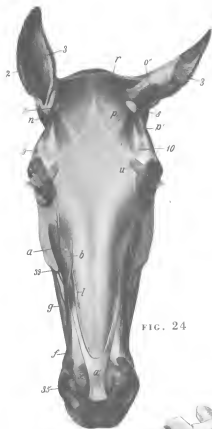


FIG. 24

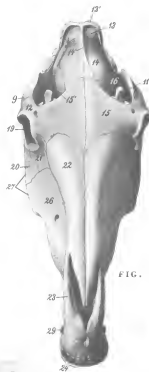


FIG. 25



FIG. 28

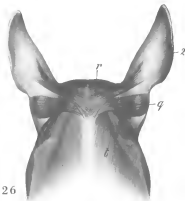


FIG. 26

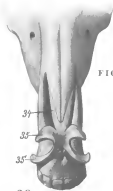


FIG. 27



FIG. 29



## THE HORSE - PLATES 11 12

## FIGURES 30 31 32 33 34 35 36 37 38 39 40 41

a—*M. extensor carpi radialis*  
 c—*M. extensor digitorum communis*  
 d, d'—*M. extensor digiti minimi*  
 e, e'—*M. extensor carpi ulnaris*  
 f—*M. abductor pollicis longus*  
 f'—*Ulnar head of the deep flexor of the digit*  
 g—*End of the M. brachialis internus*  
 g'—*End of the M. pectoralis major*  
 g''—*Same muscle of the left side*  
 h—*M. interosseus medius*  
 h'—*Tendinous band to the tendon of the digitorum communis*  
 i—*Flexor tendons*

i'—*Check ligament*  
 k—*M. flexor carpi radialis*  
 l—*M. extensor carpi ulnaris*  
 n—*Lateral cartilage*  
 o—*M. flexor digitorum profundus*  
 p—*Great subcutaneous vein*  
 q—*Annular ligament*  
 4—*Humerus*  
 4'—*External or extensor condyle of the humerus*  
 7—*Ulna*  
 8—*Olecranon*  
 9—*Radius*  
 9'—*External tuberosity of the radius*

10—*Bones of the carpus*  
 11—*Os pisiforme*  
 12—*Large metacarpal bone*  
 12'—*Tuberosity of large metacarpal bone*  
 14—*External small metacarpal bone*  
 14'—*Internal small metacarpal bone*  
 15—*Sesamoid bones of the 1st digital joint*  
 16—*Phalanx prima*  
 17—*Phalanx secunda*  
 18—*Phalanx tertia*  
 19—*Sesamoid bones of the 3rd digital joint*





FIG. 36

FIG. 37

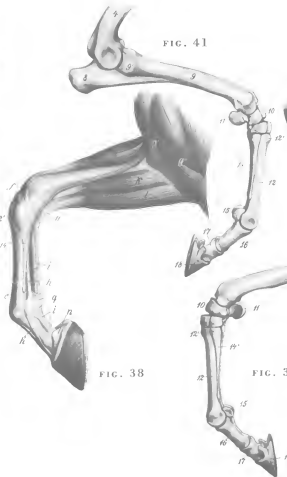


FIG. 38

FIG. 39

FIG. 40

FIG. 41

## THE HORSE - PLATES 13 14 15

FIGURES 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57  
58 59

a—*M. tibialis anterior*  
a'—Inner branch of *M. tibialis anterior*  
a''—Outer branch of *M. tibialis anterior*  
a'''—*M. peroneus tertius*  
b, b'—*M. extensor digitorum longus*  
d, d'—*M. extensor digitorum pedis lateralis*  
e—*M. flexor hallucis longus*  
e'—Fusion of tendon and *M. flexor hallucis longus*  
e''—*M. tibialis posterior*  
f—*Mm. gastrocnemii*  
f'—Tendo *Achillis*  
f''—*M. soleus*  
g—Superficial flexor tendon  
h—*M. interosseus medius*  
i, i', i''—Annular ligaments  
l—Tendinous band from the interosseus medius to the common extensor tendon  
m—*M. flexor digitorum pedis longus*  
m'—Tendon of *M. flexor digitorum pedis longus*  
o—*M. popliteus*  
o'—Fascia covering the *M. quadriceps femoris*  
q, q', q''—End of the *M. biceps femoris*  
q'''—Tendinous band from *M. biceps femoris* to fascia of leg

r—End of the *M. semitendinosus*  
r'—Tendon of *M. semitendinosus*  
w—End of the *M. gracilis*  
x—End of the *M. sartorius*  
v—End of the *M. quadriceps femoris*  
18—Lower end of femur  
20—Patella  
21—Tibia  
21'—External condyle of tibia  
21''—External malleolus of tibia  
21'''—Internal malleolus of tibia  
22—Tarsus  
22'—Os tarsi tibiale  
23—Fibula  
24—Tuber calcanei  
25—Large metatarsal bone  
25'—Inner small metatarsal bone  
25''—Nodular enlarged end of inner small metatarsal bone  
29—Sesamoid bone of 1st digital joint  
30—Phalanx *prima*  
31—Phalanx *secunda*  
32—Phalanx *tertia*  
36—Crista tibiae

47—External long lateral ligament of the hock joint  
47'—Inner edge of the lower surface of the sole, right fore hoof  
48—External short lateral ligament of the hock joint  
48'—Outer edge of the lower surface of the sole, right fore hoof  
49—Plantar ligament of the hock joint  
49'—Bearug edge, right fore hoof, shod  
50—Oblique ligament of the hock joint  
50'—So-called white line, right fore hoof  
41—Internal long lateral ligament of the hock joint  
41'—Sole, right fore hoof  
52—Internal short lateral ligament of the hock joint  
42'—Apex of frog, right fore hoof  
43—Branch of frog, right fore hoof  
44—Median furrow of frog, right fore hoof  
45—Lateral furrow of frog, right fore hoof  
46—Bar, right fore hoof  
47—Left fore hoof, shod  
48—Left hind hoof, shod







FIG. 56



FIG. 57

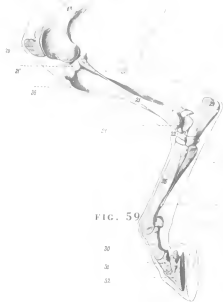


FIG. 59



FIG. 58

## THE HORSE - PLATE 16

## FIGURES 60 61 62 63 64 65 66 67

a, a', a''—Straight patellar ligaments

b, b'—Lateral patellar ligaments

c—External lateral ligaments of the stifle (or femoro-tibial) joint

c'—Internal lateral ligaments of the stifle (or femoro-tibial) joint

d—Menisci

e—External lateral ligament of the carpal joint

e'—Internal lateral ligament of the carpal joint

f—Lig. pisometacarpeum

9—Lower end of the radius

9''—External tuberosity of the radius

9'''—Internal tuberosity of the radius

11—Os pisiforme

12—Large metacarpal bone

12'—Tuberosity of large metacarpal bone

14—External small metacarpal bone

14'—Internal small metacarpal bone

15—Lower end of the femur

15'—Lower ridge of the trochanter of the femur

20—Patella

20'—Cartilage serving to complete the patella

21—Tibia

21'—External condyle of tibia

23—Fibula

36—Crista tibiae





FIG. 60



FIG. 61



FIG. 64



FIG. 65



FIG. 62



FIG. 63



FIG. 66



FIG. 67

# THE HORSE · PLATE 17

## FIGURES 68 69 70 71 72 73

- 1—Large metacarpal bone
- 2—Lower nodular end of the external small metacarpal bone
- 3—1st digital or fetlock joint
- 4—Sesamoid bone
- 5—First phalanx or large pastern bone
- 6—Second digital or pastern joint
- 7—Second phalanx or small pastern bone
- 8—Third digital or coffin joint
- 9—Third phalanx of coffin bone
- 10—Sesamoid bone of the 3rd digital joint
- 11, 11'—Lateral cartilage
- 12—*M. interosseus medius*
- 13—Tendinous band extending from the suspensory ligament to the extensor tendon

- 11, 11'—Deep flexor tendon
- 15—Superficial flexor tendon
- 15'—Terminal branches of the flexor tendon
- 16—Annular ligament of the fetlock
- 17—Fibular ligament
- 18—Reinforcing sheath of the deep flexor tendon
- 19—Lateral ligament of the coffin joint
- 20—Straight sesamoidian ligament
- 21—Tendon of the common digital extensor muscle
- 22—Tendon of the lateral digital extensor muscle
- 23, 23'—Lateral digital vein
- 24—Plantar cushion
- 25—Coronet
- 26—Ball

- 27—Junctional bar process
- 28—Tendon of the wall of the hoof
- 28'—Quarter of the wall of the hoof
- 28''—Heel of the wall of the hoof
- 29—Sole of the hoof
- 30—Frog of the hoof
- 31—Clip of the shoe
- 32—Clinches of the horseshoe nails
- 33—Fetlock (taft)
- 34—4 small depression occurring under the nodular enlarged end of the small cannon bone

FIG. 68

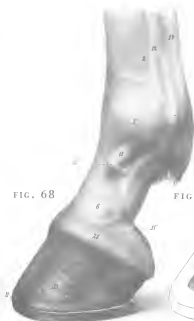


FIG. 69



FIG. 70

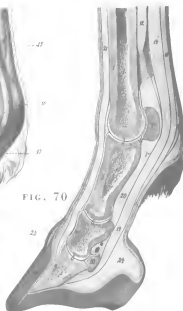


FIG. 71

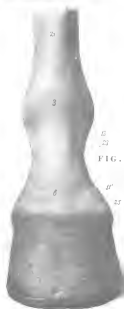


FIG. 72



FIG. 73



## THE HORSE · PLATE 18

## FIGURES 74 75 76 77 78 79 80 81 82 83

- 1—Plane of the cross section of the head shown in Fig. 81 on Plate 18
- 2—Plane of the cross section of the head shown in Fig. 82 on Plate 19
- 3—Plane of the cross section of the head shown in Fig. 83 on Plate 18
- 4—Plane of the cross section of the neck shown in Fig. 79 on Plate 18
- 5—Plane of the cross section of the chest shown in Fig. 80 on Plate 18
- 6—Plane of the cross section of the fore-arm shown in Fig. 77 on Plate 18
- 7—Plane of the cross section of the fore-cannon shown in Fig. 75 on Plate 18
- 8—Plane of the cross section of the leg shown in Fig. 78 on Plate 18
- 9—Plane of the cross section of the hind-cannon shown in Fig. 76 on Plate 18
- 10—Outer skin
- 11—Nuchal fat
- 12—*M. rhomboideus*
- 13—*M. splenius*
- 14—Cervical part of *M. serratus magnus*
- 15—*M. mastoideo-humeralis*
- 16—*M. sterno-cephalicus*
- 17—Trachea
- 18—Oesophagus
- 19—*V. jugularis*
- 20—5th cervical vertebra
- 21—*M. trapezius*
- 22—Ligamentum nuchae
- 23—Thoracic vertebra
- 24—Rib sections
- 24'—Xiphoid cartilage
- 25—Thoracic cavity
- 26—*M. pectoralis minor*
- 27—*M. rectus abdominis*
- 28—*M. obliquus abdominis externus*
- 29—Thoracic part of the *M. serratus magnus*
- 30—*M. latissimus dorsi*
- 31—Panniculus carnosus of the abdomen
- 32—Dorsal part of the *M. trapezius*
- 33—*M. longissimus dorsi*
- 34—Radius
- 35—*M. extensor carpi radialis*
- 36—*M. extensor digitorum communis*
- 37—*M. extensor digiti lateralis*
- 38—*M. extensor carpi ulnaris*
- 39—*M. flexor carpi ulnaris*
- 40—*M. flexor carpi radialis*
- 41—*M. flexor digiti ulnaris*
- 42, 43—*M. flexor digiti profundus*
- 44—Greater subcutaneous vein
- 45—Tendon of the common extensor of the digit
- 46—Tendon of the lateral extensor of the digit
- 47—Large metacarpal bone
- 48, 48'—Outer and inner small metacarpal bones
- 49—Superficial flexor tendon
- 50—Deep flexor tendon
- 50'—Reinforcing ligament of the flexor tendon
- 51—*M. interosseus medius*
- 52—Large reins
- 53—Tibia
- 54—Fibula
- 55—Long or common extensor of the digit
- 56—*M. peroneus tertius*
- 57—*M. tibialis anterior*
- 58—Tendo Achillis
- 59—Superficial flexor tendon
- 60—Deep flexor of the digit
- 60'—*M. tibialis posterior*
- 60''—*M. flexor dig. longus*
- 61—*M. extensor dig. lateralis*
- 62—Internal subcutaneous vein
- 63—Tendinous tissue
- 64—Late metatarsal bone
- 65, 65'—Outer and inner small metatarsal bones
- 66—Tendon of the long or common digital extensor
- 67—Superficial flexor tendon
- 68—Deep flexor tendon
- 69—*M. interosseus medius*
- 70—Large reins
- 71—Mandible
- 72—Maxilla
- 72'—Zygomatic or facial crest
- 73—*M. levator labii sup. propius*
- 74—*M. levator labii sup. alaeque nasi*
- 75—*M. caninus s. pyramidalis nasi*
- 76—*M. zygomaticus major*
- 77—*M. buccinator*
- 78—*M. quadratus labii inferioris*
- 80—*M. masseter*
- 81—Frontal bone
- 82—Maxillary sinus

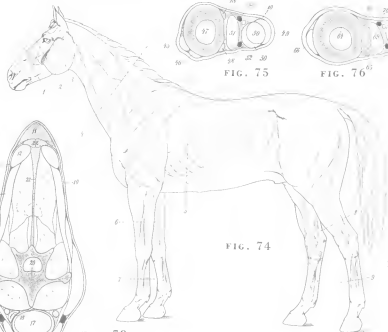


FIG. 75

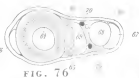


FIG. 76

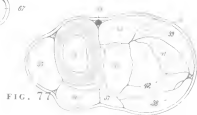


FIG. 77

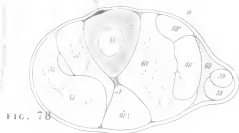


FIG. 78

FIG. 79

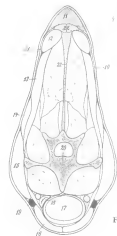


FIG. 81

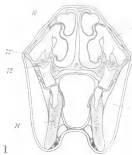
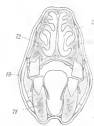


FIG. 82

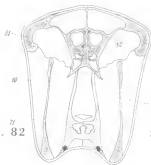


FIG. 83

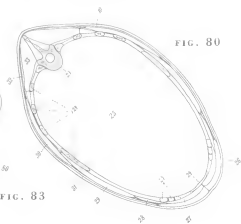


FIG. 80

## THE HORSE · PLATES 19 20

## FIGURES 84 85 86 87 88

- 1—Height of withers
- 2—Height of buttocks
- 3—Length of the trunk
- 4—Length (breadth) of the shoulder-arm vicinity
- 5—Length of buttocks
- 6—Length of the trunk
- 7—Height of the trunk
- 8—Height of the trunk
- 9—Height of the trunk
- 10—Transverse diameter of the trunk
- 11—Transverse diameter of the trunk
- 12—Transverse diameter of the trunk
- 13—Transverse diameter of the trunk
- 14—Distance between the two tuberosities of hips
- 15—Length of the neck
- 16—Height (breadth) of the insertion of the neck
- 17—Height (breadth) of the neck
- 18—Transverse diameter of the neck
- 19—Transverse diameter of the neck
- 20—Length of the head
- 21—Distance between the outer canthus and foremost ridge of the upper lip
- 22—Distance between the foremost end of the zygomatic bone and the foremost ridge of the upper lip
- 23—Height of the head
- 24—Breadth or transversal diameter of the head
- 25—Breadth of the head
- 26—Vertical distance of the nether chest-margin from the ground

- 27—Distance of the olecranon from the ground
- 28—Measurement of length from the elbow-joint to the nether end (condyle) of the styloid-bone
- 29—Measurement of the length from the olecranon to the most prominent point of the pisiform bone
- 30—Distance of the most prominent point of the pisiform bone from the middle of the pastern joint
- 31—Length of the fetlock
- 32—Length of the toe-joints
- 33—Diameter of the depth of the forearm
- 34—Diameter of the depth of the carpus
- 35—Diameter of the depth of the meta-tarsus
- 36—Diameter of the depth of the pastern joint
- 37—Diameter of the depth in the middle of the fetlock
- 38—Transverse diameter or breadth of the forearm
- 39—Diameter of breadth or transverse diameter of the forearm just above the carpus
- 40—Greatest breadth of the carpus
- 41—Breadth, transverse diameter of the middle of the metacarpus
- 42—Breadth of the fetlock joint
- 43—Breadth of the middle of the fetlock
- 44—Greatest breadth of the coronet ridge of the hoof

- 45—Greatest breadth of the hoof at the bearing ridge of the wall of the hoof
- 46—Vertical distance of the patella from the ground
- 47—Distance of the patella from the inner condyle of the tibia
- 48—Vertical distance of the tuber calcanei from the ground
- 49—Length of the fetlock
- 50—Length of the toe part of the wall of the hoof
- 51—Diameter of the depth of the leg
- 52—Diameter of the depth of the lower leg
- 53—Greatest depth diameter of the tarsus
- 54—Diameter of the depth of the middle of the cannon
- 55—Diameter of the depth of the fetlock joint
- 56—Diameter of the depth of the middle of the fetlock
- 57—Transverse diameter of the most prominent parts of both upper thighs
- 58—Breadth, transverse diameter of the lower leg
- 59—Breadth, transverse diameter of the lower leg
- 60—Breadth of the tarsus
- 61—Middle breadth of the hind meta-tarsus
- 62—Breadth of the hind fetlock joint
- 63—Middle breadth of the hind fetlock
- 64—Breadth of the upper coronet ridge of the hind hoof
- 65—Breadth of the bearing edge of the hind foot

Directions of the hair tracts



FIG. 84



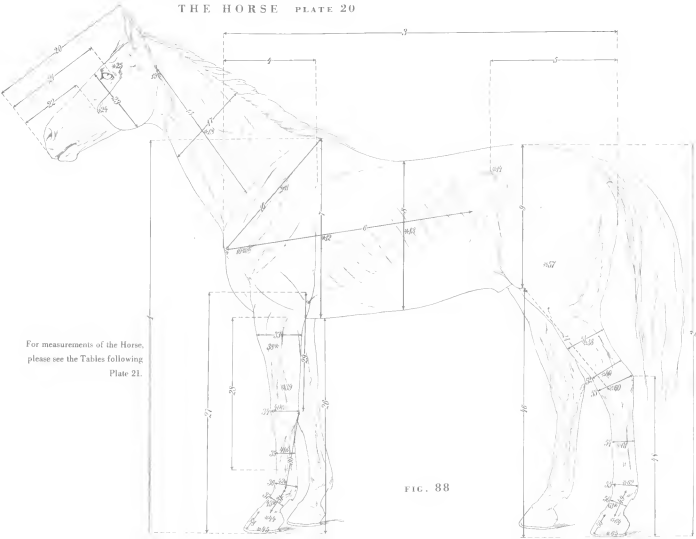
FIG. 85



FIG. 86



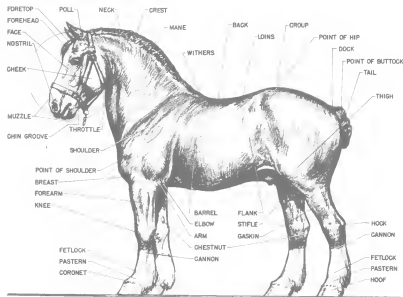
FIG. 87



For measurements of the Horse,  
please see the Tables following  
Plate 21.

FIG. 88





*The Points of the Horse. This is a 17 hand (68 inch) Clydesdale stallion. His head is 28 inches long.*

These Tables refer to Plate 20.	Measures of height		Measures of length of trunk				Measures of height of trunk			Transverse diameter of the trunk					Length of neck	Height of neck	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
English riding horse 12 year old gelding	63 <sup>11</sup> / <sub>16</sub>	61 <sup>1</sup> / <sub>2</sub>	67 <sup>13</sup> / <sub>16</sub>	15	21 <sup>7</sup> / <sub>16</sub>	42 <sup>7</sup> / <sub>16</sub>	29 <sup>1</sup> / <sub>16</sub>	25 <sup>3</sup> / <sub>16</sub>	24	17 <sup>1</sup> / <sub>16</sub>	12 <sup>9</sup> / <sub>16</sub>	18 <sup>1</sup> / <sub>16</sub>	24 <sup>9</sup> / <sub>16</sub>	19 <sup>4</sup> / <sub>16</sub>	26	26	15 <sup>1</sup> / <sub>16</sub>
English half-bred inclination to thoroughbred	62 <sup>1</sup> / <sub>2</sub>	61 <sup>1</sup> / <sub>4</sub>	65 <sup>9</sup> / <sub>16</sub>	13 <sup>1</sup> / <sub>16</sub>	19 <sup>1</sup> / <sub>2</sub>	37 <sup>9</sup> / <sub>16</sub>	29 <sup>1</sup> / <sub>2</sub>	25 <sup>1</sup> / <sub>4</sub>	22 <sup>1</sup> / <sub>16</sub>	15	10 <sup>1</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>16</sub>	21 <sup>1</sup> / <sub>16</sub>	18 <sup>1</sup> / <sub>2</sub>	24 <sup>1</sup> / <sub>4</sub>	24 <sup>1</sup> / <sub>4</sub>	12 <sup>1</sup> / <sub>4</sub>
English thoroughbred stallion 10 year old race horse	62 <sup>1</sup> / <sub>2</sub>	62 <sup>3</sup> / <sub>4</sub>	62 <sup>15</sup> / <sub>16</sub>	15 <sup>1</sup> / <sub>16</sub>	19 <sup>1</sup> / <sub>4</sub>	38 <sup>1</sup> / <sub>4</sub>	27 <sup>3</sup> / <sub>16</sub>	23 <sup>3</sup> / <sub>16</sub>	21 <sup>1</sup> / <sub>16</sub>	17 <sup>1</sup> / <sub>16</sub>	11 <sup>3</sup> / <sub>16</sub>	15 <sup>15</sup> / <sub>16</sub>	21 <sup>1</sup> / <sub>16</sub>	17 <sup>1</sup> / <sub>16</sub>	24 <sup>1</sup> / <sub>16</sub>	22 <sup>3</sup> / <sub>16</sub>	14
English thoroughbred mare 9 year old race horse	63 <sup>1</sup> / <sub>16</sub>	63 <sup>1</sup> / <sub>16</sub>	64 <sup>1</sup> / <sub>16</sub>	13 <sup>3</sup> / <sub>16</sub>	20 <sup>1</sup> / <sub>16</sub>	40 <sup>1</sup> / <sub>16</sub>	30 <sup>1</sup> / <sub>16</sub>	26	22 <sup>1</sup> / <sub>16</sub>	15 <sup>1</sup> / <sub>16</sub>	10 <sup>1</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>16</sub>	20 <sup>1</sup> / <sub>16</sub>	17 <sup>1</sup> / <sub>16</sub>	26	25 <sup>1</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>4</sub>
English Shire stallion	65 <sup>1</sup> / <sub>16</sub>	62 <sup>9</sup> / <sub>16</sub>	68 <sup>1</sup> / <sub>16</sub>	17 <sup>1</sup> / <sub>16</sub>	21 <sup>7</sup> / <sub>16</sub>	43 <sup>1</sup> / <sub>16</sub>	31 <sup>1</sup> / <sub>16</sub>	28 <sup>15</sup> / <sub>16</sub>	23 <sup>1</sup> / <sub>16</sub>	20 <sup>1</sup> / <sub>16</sub>	16 <sup>1</sup> / <sub>16</sub>	22 <sup>1</sup> / <sub>16</sub>	27 <sup>1</sup> / <sub>16</sub>	20 <sup>1</sup> / <sub>16</sub>	25 <sup>1</sup> / <sub>16</sub>	28 <sup>1</sup> / <sub>16</sub>	18 <sup>1</sup> / <sub>16</sub>
Belgian mare—5 years	63 <sup>1</sup> / <sub>16</sub>	63 <sup>1</sup> / <sub>16</sub>	66 <sup>7</sup> / <sub>16</sub>	16 <sup>1</sup> / <sub>2</sub>	18 <sup>1</sup> / <sub>16</sub>	41 <sup>1</sup> / <sub>16</sub>	32 <sup>1</sup> / <sub>16</sub>	28 <sup>1</sup> / <sub>16</sub>	24	21 <sup>1</sup> / <sub>16</sub>	14 <sup>1</sup> / <sub>16</sub>	20 <sup>1</sup> / <sub>16</sub>	26 <sup>1</sup> / <sub>4</sub>	21 <sup>1</sup> / <sub>16</sub>	23 <sup>1</sup> / <sub>16</sub>	26	18 <sup>1</sup> / <sub>2</sub>
Belgian gelding—5 years	62 <sup>1</sup> / <sub>2</sub>	63 <sup>3</sup> / <sub>16</sub>	66 <sup>5</sup> / <sub>16</sub>	16 <sup>1</sup> / <sub>2</sub>	20 <sup>1</sup> / <sub>2</sub>	37 <sup>1</sup> / <sub>16</sub>	31 <sup>1</sup> / <sub>16</sub>	26 <sup>1</sup> / <sub>16</sub>	23 <sup>1</sup> / <sub>16</sub>	19 <sup>1</sup> / <sub>16</sub>	14	18 <sup>1</sup> / <sub>16</sub>	25 <sup>1</sup> / <sub>16</sub>	20 <sup>1</sup> / <sub>16</sub>	23 <sup>1</sup> / <sub>16</sub>	24 <sup>1</sup> / <sub>16</sub>	16 <sup>1</sup> / <sub>4</sub>

	Transverse diameter of neck		Head length			Head height	Breadth diameters		Measures of length of fore limb							
	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
English riding horse 12 year old gelding	7 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	26	16 <sup>1</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>16</sub>	11 <sup>13</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>16</sub>	34 <sup>1</sup> / <sub>16</sub>	39 <sup>15</sup> / <sub>16</sub>	23 <sup>1</sup> / <sub>16</sub>	19 <sup>1</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	3 <sup>13</sup> / <sub>16</sub>	
English half-bred inclination to thoroughbred	5 <sup>16</sup> / <sub>16</sub>	6 <sup>9</sup> / <sub>16</sub>	25 <sup>1</sup> / <sub>16</sub>	16 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>16</sub>	11	6 <sup>1</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>16</sub>	33 <sup>1</sup> / <sub>16</sub>	38 <sup>1</sup> / <sub>16</sub>	24 <sup>1</sup> / <sub>16</sub>	20 <sup>1</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	
English thoroughbred stallion 10 year old race horse	7 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>16</sub>	24 <sup>1</sup> / <sub>16</sub>	15 <sup>1</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>16</sub>	11	6 <sup>1</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>16</sub>	35 <sup>1</sup> / <sub>16</sub>	38 <sup>15</sup> / <sub>16</sub>	24 <sup>1</sup> / <sub>16</sub>	19 <sup>1</sup> / <sub>16</sub>	13 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	
English thoroughbred mare 9 year old race horse	5 <sup>3</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>16</sub>	25 <sup>1</sup> / <sub>16</sub>	16 <sup>15</sup> / <sub>16</sub>	10 <sup>1</sup> / <sub>16</sub>	11 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>16</sub>	33 <sup>1</sup> / <sub>16</sub>	38 <sup>15</sup> / <sub>16</sub>	24	20 <sup>1</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	
English Shire stallion	8 <sup>1</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>16</sub>	27 <sup>1</sup> / <sub>16</sub>	17 <sup>1</sup> / <sub>16</sub>	11	13	7 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>16</sub>	31 <sup>1</sup> / <sub>2</sub>	37 <sup>1</sup> / <sub>16</sub>	23 <sup>1</sup> / <sub>16</sub>	18 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>16</sub>	3 <sup>15</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	
Belgian mare—5 years	7 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>16</sub>	28 <sup>1</sup> / <sub>16</sub>	18 <sup>1</sup> / <sub>16</sub>	11 <sup>1</sup> / <sub>16</sub>	13 <sup>1</sup> / <sub>16</sub>	8	10 <sup>1</sup> / <sub>16</sub>	31 <sup>1</sup> / <sub>16</sub>	39 <sup>1</sup> / <sub>16</sub>	23 <sup>1</sup> / <sub>16</sub>	18 <sup>1</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	
Belgian gelding—5 years	7 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	28 <sup>1</sup> / <sub>16</sub>	17 <sup>1</sup> / <sub>16</sub>	11	13 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>16</sub>	31 <sup>1</sup> / <sub>16</sub>	39 <sup>1</sup> / <sub>16</sub>	23 <sup>1</sup> / <sub>16</sub>	19 <sup>1</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	

	Diameters of fore limb					Transverse diameters or thickness through leg at starred point										Measures of length of the hind limb				
	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50		
<i>English riding horse 12 year old gelding</i>	7½	4¾	3¾	3½	3¼	4¾	2¾	4½	2	3¾	2¾	4½	5½	39½	20½	25	4¾	4½		
<i>English half-bred inclination to thoroughbred</i>	5½	4¾	2¾	2¾	2½	3½	2¾	3½	1¾	2¾	2	4½	4½	38½	20½	24½	5¾	4¾		
<i>English thoroughbred stallion 10 year old race horse</i>	6½	4¾	2½	3¾	2¾	3½	2¾	4¾	1¾	2¾	2	3¾	4¾	40½	20½	25½	6¾	4¾		
<i>English thoroughbred mare 9 year old race horse</i>	6½	4¾	2½	3¾	2¾	3¾	2¾	3¾	1¾	2¾	1½	3½	4¾	40½	20¾	25½	5¾	4¾		
<i>English Shire stallion</i>	8½	5½	3¾	4¾	5¾	4¾	3¾	5½	2¾	3¾	2¾	5½	6½	37¾	18¾	25½	4	4¾		
<i>Belgian mare—5 years</i>	7¾	4¾	3¾	3½	2½	4¾	3¾	4¾	2¾	3¾	2¾	5½	6½	38½	18¾	24½	3½	4¾		
<i>Belgian gelding—5 years</i>	7¾	4¾	3¾	3¾	2¾	4¾	3¾	4¾	2¾	3½	2¾	4¾	6½	38½	19¼	25½	3½	4¾		

	Width diameters of hind leg						Transverse diameters or thickness through hind leg at starred points									
	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	
<i>English riding horse 12 year old gelding</i>	6½	5½	6½	3¾	3¾	2¾	23	4½	3¾	4½	3¾	3¾	2½	4¾	5¾	
<i>English half-bred inclination to thoroughbred</i>	5½	5½	5½	3¾	3¾	3¾	20½	3½	2¾	3¾	1¾	2¾	2	4¾	4¾	
<i>English thoroughbred stallion 10 year old race horse</i>	6½	5½	5¾	3¾	3¾	2¾	21½	4¾	2¾	3½	1¾	2½	2	3¾	4¾	
<i>English thoroughbred mare 9 year old race horse</i>	6½	5½	5½	3¾	3½	2½	20½	4¾	2¾	3½	1¾	2½	2¾	4	4	
<i>English Shire stallion</i>	7½	6½	7½	4¾	5¾	3½	24¾	5½	3½	5¾	2¾	4¾	3¾	5¾	6¾	
<i>Belgian mare—5 years</i>	6¾	6½	6½	3½	3½	3¾	24½	5½	3¾	4¾	2¾	3¾	2¾	5½	6½	
<i>Belgian gelding—5 years</i>	6½	6½	6½	3½	3½	2¾	22½	4½	3¾	4½	2¾	3¾	2¾	5	6½	

The Dog

## THE DOG — PLATES 1 2 3 4 5 6 7 8

## FIGURES 1 2 3 4 5 6 7 8 9 10 11 12 13

a, a'—*M. trapezius*  
 b—*Inferior M. levator anguli scapulae*  
 c—*M. brachiocephalicus s. cleidomastoideus*  
 c'—*Mastoid portion of the sterno-cleid-mastoid muscle*  
 d—*Tendinous band*  
 d—*M. sternomastoideus*  
 e, e'—*M. deltoideus*  
 f, f'—*M. triceps brachii, f. caput longum, f. caput laterale*  
 g, g'—*M. pectoralis major s. superficialis*  
 h—*M. pectoralis minor s. profundus*  
 i—*Thoracic portion of M. serratus anterior*  
 i'—*Cervical portion of M. serratus anterior*  
 k—*M. latissimus dorsi*  
 l—*M. obliquus abdominis externus*  
 l'—*Aponeurosis*  
 m—*Posterior part of M. serratus posterior*  
 m'—*Lumbo-dorsal fascia*  
 m''—*Anterior part of M. serratus posterior*  
 n—*A small part of origin of M. obliquus abdominis internus*  
 o—*M. tensor fasciae latae*  
 o'—*Surface of thigh*  
 o''—*M. gluteus maximus s. superficialis*  
 p—*M. gluteus medius*  
 q—*M. biceps femoris*  
 r—*M. semitendinosus*  
 s, t—*Levators of the tail*

u—*Abductor of the tail*  
 v—*M. semimembranosus*  
 w—*M. gracilis*  
 x—*Levator of the ankle*  
 x'—*M. occipitalis*  
 y—*M. obturator internus*  
 z—*M. supraspinatus*  
 z'—*A small part of the M. infraspinatus*  
 1H—*1st cervical vertebra (Atlas)*  
 7H—*Last (7th) cervical vertebra*  
 1R—*1st rib*  
 1R'—*1st thoracic (dorsal) vertebra*  
 6R—*6th rib*  
 12R—*12th thoracic (dorsal) vertebra*  
 13R—*13th rib*  
 11—*1st lumbar vertebra*  
 7L—*7th lumbar vertebra*  
 k—*Sacrum*  
 1S—*1st caudal vertebra*  
 \*—*Ala of the atlas*  
 1—*Scapula*  
 2—*Spina scapulae*  
 3—*Acromion*  
 4—*Humerus*  
 4'—*Epicondyle*  
 5—*Tuberculum majus*  
 6—*Rotator*  
 7—*Ulna*  
 8—*Olecranon*

9—*Radius*  
 10—*Carpus*  
 11—*Os pisiforme*  
 12—*Metacarpus*  
 14—*Phalanges manus*  
 14—*Sternum*  
 14'—*Manubrium sterni*  
 15—*Ossa pelvis*  
 16—*Tuber coxae*  
 17—*Tuber sacrale*  
 18—*Os femoris*  
 19—*Trochanter major*  
 20—*Patella*  
 21—*Tibia*  
 21'—*External condyle of the tibia*  
 22—*Tarsus*  
 23—*Fibula*  
 24—*Tuber calcanei*  
 25—*Metatarsus*  
 26—*Phalanges pedis*  
 27—*Os parietale*  
 27'—*Cervical crest of os occipitale*  
 28, 28'—*M. quadriceps femoris*  
 29—*M. semimembranosus*  
 30—*Mm. gastrocnemii*  
 31—*M. sterno-hyoideus*  
 32—*V. jugularis*  
 33—*Head part of M. rhomboideus*  
 34—*M. rhomboideus*

- 35—*M. spinalis et semispinalis dorsi*  
36—*M. longissimus dorsi*  
37—*M. iliocostalis*  
38—Part of origin of *M. teres major*  
39—*M. splenius*

- 40—*M. intercostalis*  
41—*Lig. tuberoso- et spinosacrum*  
42—Popliteal lymphatic gland  
43—*M. transversus abdominis*

- 44—*M. rectus abdominis*  
45—Depressor of the tail  
46—Anterior part of *M. sartorius*  
48—A part of *M. sculenus*



FIG. 1





# THE DOG PLATE 3

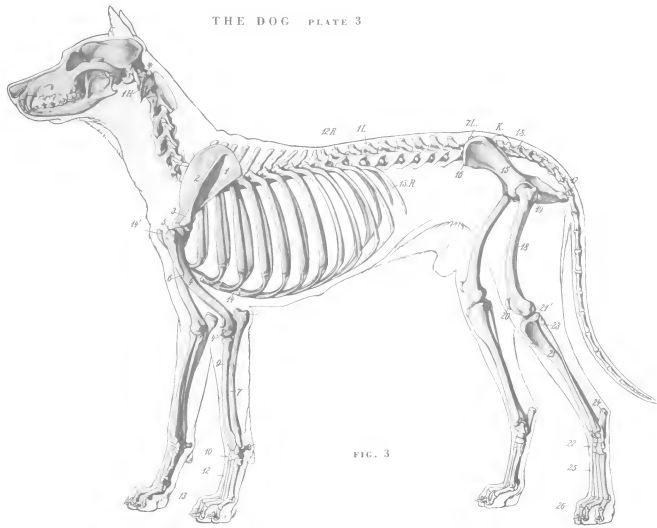


FIG. 3

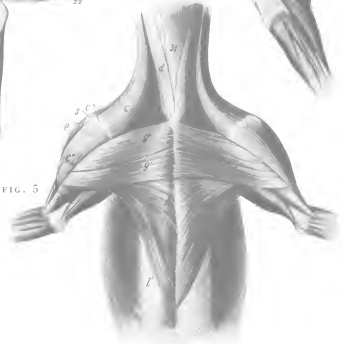
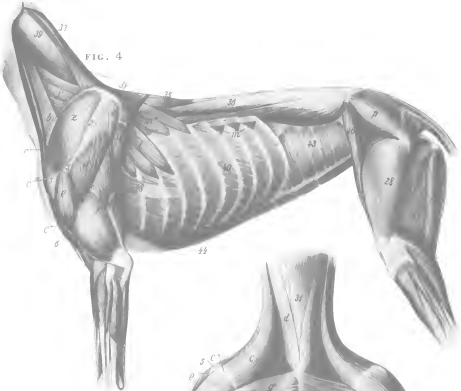


FIG. 6

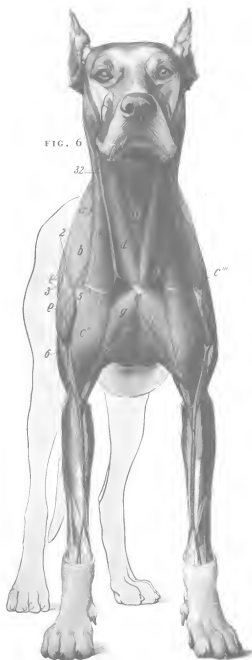


FIG. 7

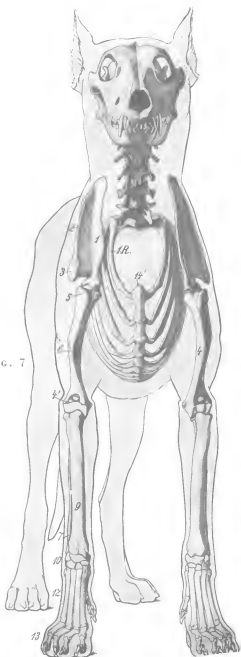


FIG. 8

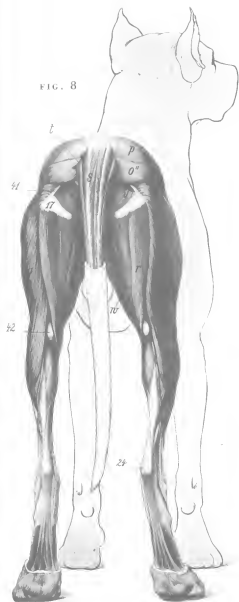
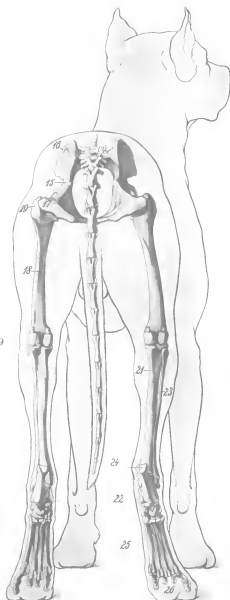


FIG. 9



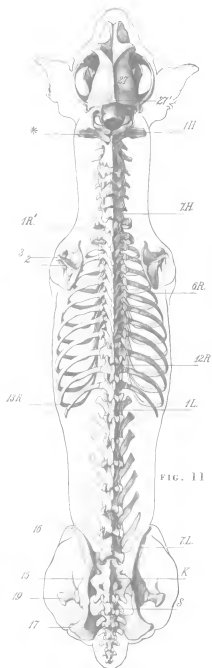
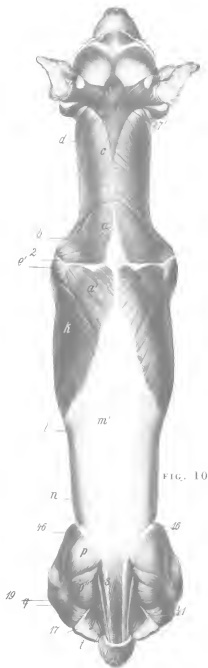


FIG. 12

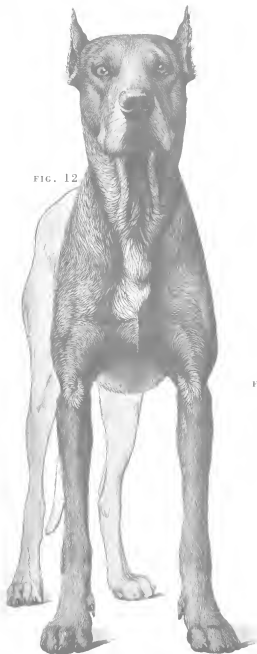
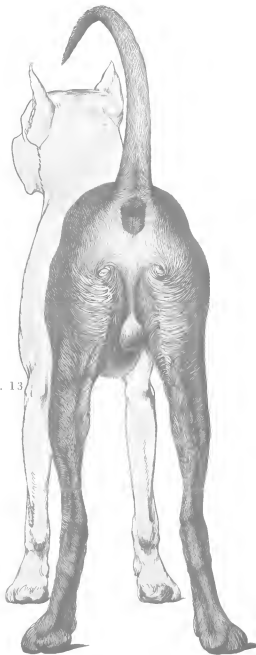


FIG. 13



## FIGURES 14 15 16 17 18 19 20 21 22 23 24 25 26

- A—Plantar ball  
 B—Digital ball  
 B'—Digital ball of the 1st toe  
 C—Carpal ball  
 a, a'—*M. extensor carpi radialis*  
 c, c'—*M. extensor digitorum communis*  
 d—*M. extensor digiti minimi*  
 e—*M. extensor carpi ulnaris*  
 f—*M. abductor pollicis langus*  
 g—End of *M. brachialis internus*  
 g'—End of *M. biceps brachii*  
 h, h'—*M. interosseus*  
 k—*M. flexor carpi radialis*  
 l—*M. flexor carpi ulnaris*  
 m—*M. flexor dig. sublimis*  
 m'—The four divisions of the lower part of the  
     *M. flexor dig. sublimis*  
 o—*M. flexor dig. profundus*  
 o'—The divisions of the lower part of the *M.*  
     *flexor dig. profundus*  
 q—The thin end tendons of *M. extensor pollicis*  
     *langus et indicis proprius*  
 r—*M. brachioradialis*  
 s—*M. anconeus parvus*  
 t—*M. pronator teres*  
 v—*M. abductor digiti V proprius*  
 w—Crural elastic ligament  
 4—Humerus  
 4'—Extensor condyle of humerus  
 4''—Flexor condyle of humerus  
 7—Ulna  
 7'—Lower end of ulna (external epicondyle)  
 8—Olecranon  
 9—Radius  
 9''—Tubercles of radius  
 10—Carpus  
 11—Os pisiforme  
 12—Metacarpus  
 15—Sesamoid bones  
 16—Phalanx prima  
 17—Phalanx secunda  
 18—Phalanx tertia

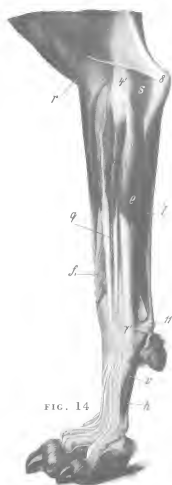


FIG. 14



FIG. 15



FIG. 16

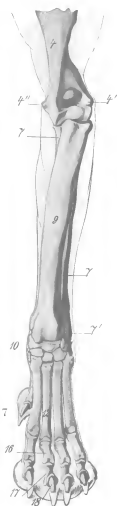
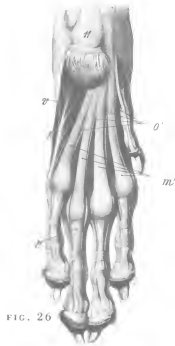


FIG. 17





## THE DOG · PLATES 12 13

## FIGURES 27 28 29 30 31 32 33 34

a, a'—*M. tibialis anterior*  
 b, b'—*M. extensor dig. pedis longus*  
 c—*M. peroneus longus*  
 c'—Tendon  
 d—Tendon of *M. extensor dig. pedis lateralis*  
 d'—*M. peroneus brevis*  
 e—*M. flexor hallucis longus*  
 e'—A tendinous ligament  
 e''—Tendon of *M. tibialis posterior*  
 f—Terminal section of the *Mm. gastrocnemii*  
 f'—Tendo *Achillis*  
 g, g'—*M. flexor dig. pedis sublimis*  
 h—*Mm. interossei*  
 i—Annular ligaments

m, m'—*M. flexor dig. pedis longus*  
 n—Interior lateral ligament of the ankle joint  
 o'—Fascia lata of femur  
 q, q'—End of *biceps femoris*  
 r—End of *M. semitendinosus*  
 r', r''—Two tendons at end of *M. semitendinosus*  
 w—End of *M. gracilis*  
 x, x'—End of *M. surorius*  
 z—*M. extensor dig. pedis brevis*  
 18—Lower end of the femur  
 18'—Small sesamoid bones  
 20—Patella  
 21—Tibia  
 21'—Interior condyle of tibia

21''—Lower end of fibula  
 21'''—Interior knuckle  
 22—Tarsus  
 23—Fibula  
 24—Tuber calcanei  
 25—Posterior metatarsus  
 28—Tuberositas fibiae  
 29—Sesamoid bones of the toe joints of the  
     metatarsus  
 30—Phalanx prima  
 31—Phalanx secunda  
 32—Phalanx tertia

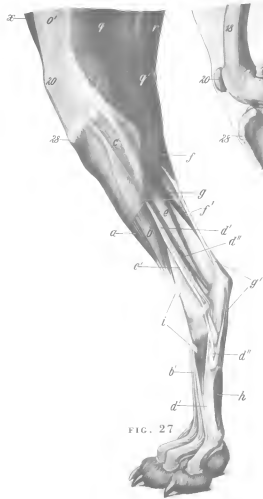


FIG. 27

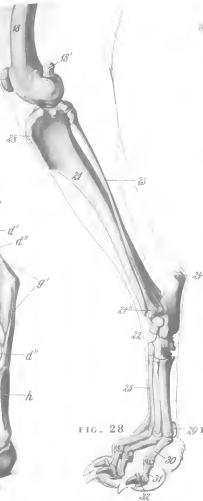


FIG. 28



FIG. 29

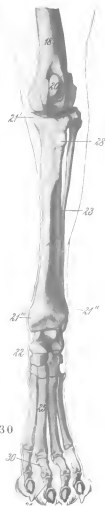
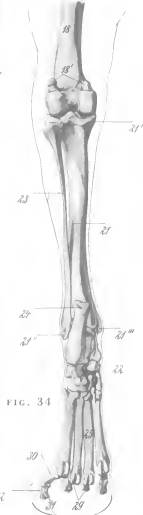
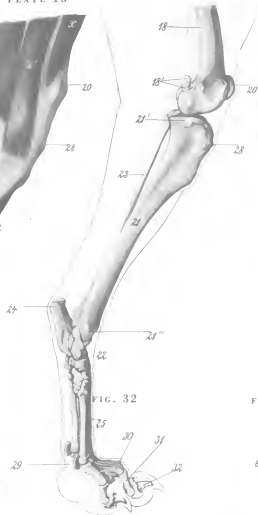
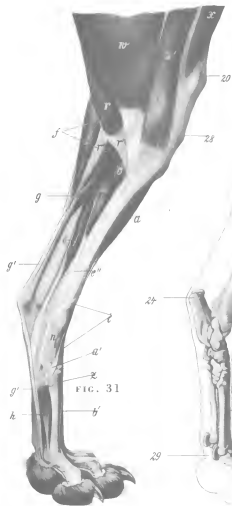


FIG. 30



## THE DOG - PLATES 14 15 16

## FIGURES 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

a, a'—*M. levator labii superioris proprius*  
 b—*M. levator nasolabialis*  
 c—*M. brachiocephalicus s. cleidomastoideus*  
 c'—*M. sternomastoideus*  
 e—End of *Mm. sternohyoidei*  
 f—*M. caninus s. paramidialis nasi*  
 g—*M. zygomaticus*  
 g'—*M. zygomaticus minor s. M. malaris*  
 h—*M. buccalis*  
 i—*M. molaris*  
 k—*M. orbicularis oris*  
 m—*M. masseter*  
 n—*M. depressor auris*  
 o—Exterior adductor of the ear  
 p, p'—Common muscle of the ear  
 q—End of the long abductor of the ear  
 r—Long levator of the auricle  
 u—*M. orbicularis palpebrarum*  
 u', u'', u'''—*Mm. corrugatores supercilii*  
 v—End of the two-bellied (digastric) muscle  
 w—*M. mylohyoideus*  
 y—Cervical subcutaneous muscle (cervical panniculus)  
 z—*M. temporalis*  
 z'—*M. occipitalis*

1—Left auricle  
 2, 2'—Posterior edge of the auricle  
 4—*Incisura intertragica*  
 8—Scutulum  
 9—Arcus zygomaticus  
 11—Processus coronoideus of the inferior maxillary bone  
 12—Frontal process of the molar bone  
 12' Zygomatic process of the frontal bone  
 12''—Orbital band on the frontal bone  
 13—Os occipitale  
 13'—Spine of the occipital bone  
 13''—Jugular process of the occipital bone  
 13'''—Condylod process of the occipital bone  
 14—Os parietale  
 14' Crest of the parietal bone  
 15—Os frontale  
 16—Os temporale  
 17—Meatus acusticus externus  
 18—Temporo-maxillary articulation  
 19—Orbita  
 20—Os zygomaticum s. jugale  
 21—Os lacrimale  
 22—Os nasale  
 23—Os incisivum  
 24—Upper incisor teeth

24'—Lower incisor teeth  
 25—Upper canine tooth  
 26—Maxilla  
 27—Facial crest  
 28—Unpaired portion of the lower jawbone  
 28'—Paired portion of the body of the lower jawbone  
 29—Lower canine tooth  
 30—Branch of the lower jaw  
 30'—Processus angularis  
 31—Condylod process of the lower jaw  
 32—Atlas  
 34—Upper lateral cartilage of the nose  
 34'—Lower lateral cartilage of the nose  
 35—External insertion cartilage  
 36—Lymph follicle of the oesophagus  
 38—V. jugularis  
 39—V. facialis  
 44—Glandula parotis  
 49—Nose  
 50—Glandula submaxillaris  
 52—Eyelid  
 53—Caruncula lacrimalis  
 55—Anterior part of the sclera  
 55'—Cornea  
 56—Pupil

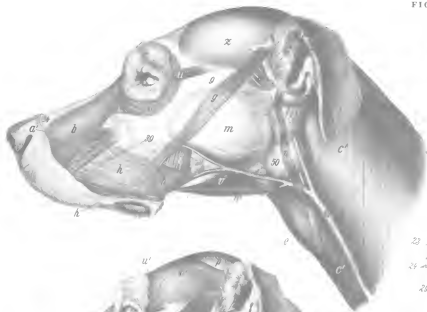


FIG. 47



FIG. 39  
(SHORT HEAD)



FIG. 36



FIG. 38  
(LONG HEAD)

FIG. 35

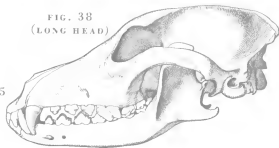




FIG. 41



FIG. 40



FIG. 46



FIG. 42



FIG. 48

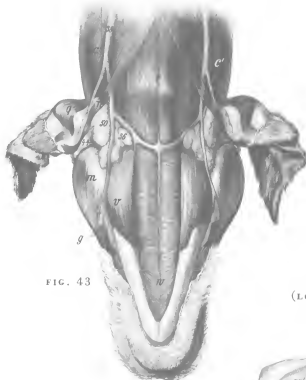


FIG. 43

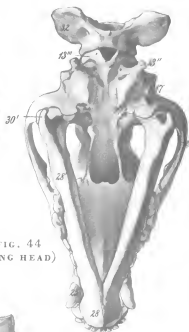


FIG. 44  
(LONG HEAD)

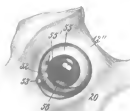


FIG. 49



FIG. 50



FIG. 45  
(SHORT HEAD)



## The Lion

## THE LION - PLATES 1 2 3 4 5 6

## FIGURES 1 2 3 4 5 6 7 8 9

- a, a'—*M. trapezius*  
 b—Shoulder-transverse-process muscle  
 c, c', c''—*M. cleidomastoides*  
 d—*M. sternomandibularis*  
 e, e'—*M. deltoideus*  
 f, f'—*M. triceps brachii*  
 g, g'—*M. pectoralis major*  
 h—Posterior part of the *M. pectoralis minor*  
 k—*M. latissimus dorsi*  
 l—*M. obliquus abdominis externus*  
 l'—*Aponeurosis*  
 l''—Fold of muscle at thigh  
 m—Lumbo-dorsal fascia  
 o—*M. tensor fasciae latae*  
 o'—Fascia lata  
 o''—*M. gluteus maximus*  
 p—*M. gluteus medius*  
 p'—Fascia glutea  
 q, q'—*M. biceps femoris*  
 r—*M. semitendinosus*  
 s—Levator of the tail  
 t—*Mm. intertransversarii of the tail*  
 v—*M. semimembranosus*  
 w—*M. gracilis*  
 x—*M. occipitalis*  
 y, y'—Muscles of the ear  
 1H—1st cervical vertebra (*Atlas*)  
 7H 7th cervical vertebra  
 K—Sacrum  
 6k—6th costal cartilage  
 1L 1st lumbar vertebra  
 7L 7th lumbar vertebra  
 1R—1st rib  
 6R—6th rib  
 12R—12th thoracic (dorsal) vertebra  
 13R—13th rib  
 1Rx—1st thoracic (dorsal) vertebra  
 1S 1st caudal vertebra  
 \*—4th border of atlas  
 1—Scapula  
 2—Spina scapulae  
 3—Acromion  
 4—Humerus  
 4'—External epicondyle  
 5—External tuberosity  
 6—Rotator  
 7—Ulna  
 8—Olecranon  
 9—Radius  
 10—Carpus  
 11—Os pisiforme  
 12—Metacarpus  
 13—Phalanges manus  
 14—Sternum  
 14'—Manubrium sterni  
 15—Os pelvis  
 16—Tuber coxae  
 17—Tuber ischiadicum  
 18—Os femoris  
 19—Trochanter major  
 20—Patella  
 21—Tibia  
 21'—External condyle of the tibia  
 22—Tarsus  
 23—Fibula  
 24—Tuber calcanei  
 25—Metatarsus  
 26—Phalanges pedis  
 27—Occipital tuberosity  
 28—Parietal bones  
 30—Transverse processes of the lumbar vertebrae  
 44—Incipient part of the *M. rectus abdominis*  
 46—Anterior belly of the *M. sartorius*  
 47—*M. tensor fasciae antebrachii*  
 48—*M. abductor cruris anterior*

THE LION PLATE I

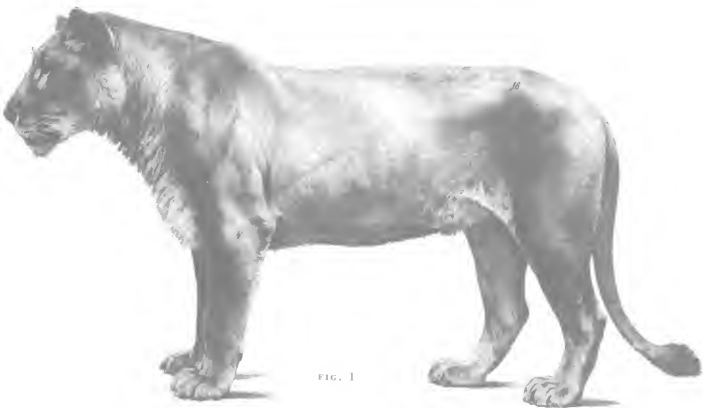


FIG. 1

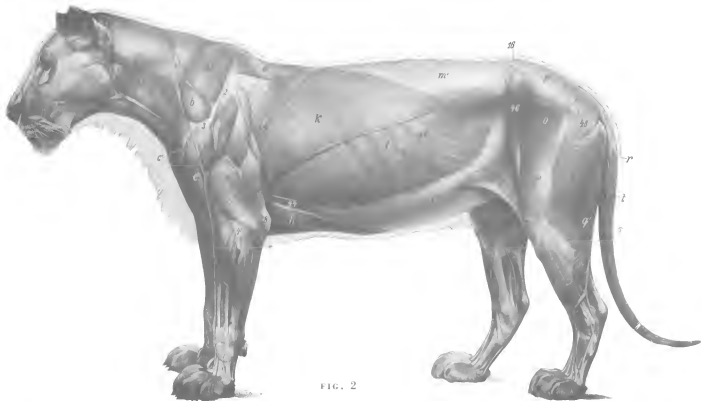


FIG. 2

THE LION PLATE 3

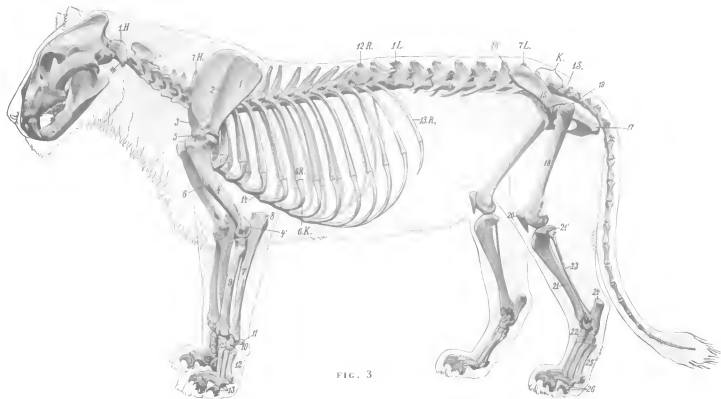


FIG. 3

THE LION PLATE 4

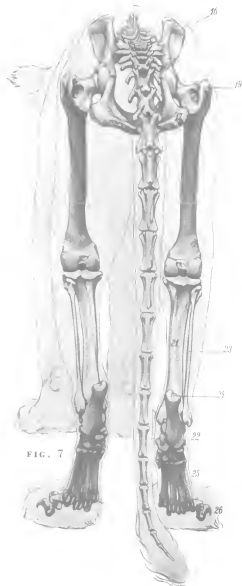


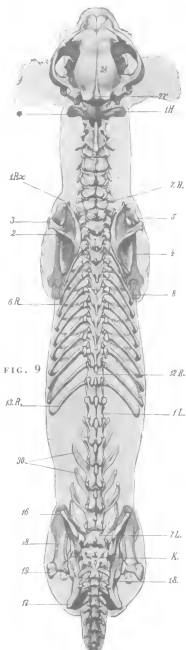
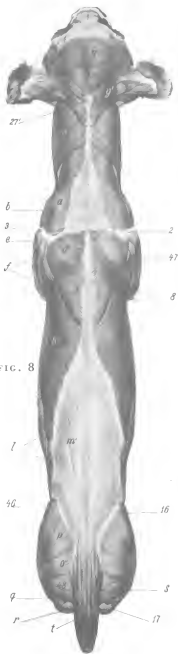
FIG. 4



FIG. 5

# THE LION PLATE 5







## THE LION - PLATES 7 8 9

## FIGURES 10 11 12 13 14 15 16 17 18 19 20 21 22

a, a'—*M. extensor carpi radialis*  
 c—*M. extensor digitorum communis*  
 c'—Tendons on phalanx of toe  
 d—*M. extensor digitorum lateralis* s. *digiti quinti proprius*  
 e—*M. extensor carpi ulnaris*  
 f—*M. abductor pollicis longus*  
 g—End of the *M. brachialis internus*  
 g'—End of the *M. pectoralis major*  
 h—One of the *Mm. interossei*  
 h'—Extensor tendon  
 i—Flexor tendons  
 k—*M. flexor carpi radialis*  
 l, l'—*M. flexor carpi ulnaris*  
 m—*M. flexor digitorum sublimis*  
 m'—Tendons from *M. flexor digitorum sublimis*

n—Parts of the *M. flexor digitorum profundus*  
 q—*M. extensor pollicis et indicis proprius*  
 r—*M. brachioradialis*  
 s—*M. anconaeus parvus*  
 t—*M. pronator teres*  
 u—*M. plantaris brevis*  
 v—*M. abductor digiti quinti*  
 w—4 strong elastic ligament  
 x—Caput mediale of the *M. triceps brachii*  
 y—Plantar balls  
 y'—Digital balls  
 z—Humerus  
 z'—Its extensor condyle  
 z''—Its flexor condyle  
 7 Ulna

7' Lower end of the ulna  
 8—Olecranon  
 9—Radius  
 9''—Tuberositas radii lateralis  
 10—Carpus  
 11—Os pisiforme  
 12—Metacarpus  
 15—Sesamoid bones of the 3rd & 4th metatarsal digital joint  
 16—Phalanx prima  
 17 Phalanx secunda  
 17' Ball-like beginning of ligament connecting phalanx secunda with phalanx tertia  
 18 Phalanx tertia  
 19—Ring-shaped fold of skin



FIG. 10



FIG. 11



FIG. 12



FIG. 13



FIG. 14



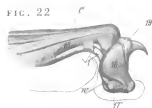
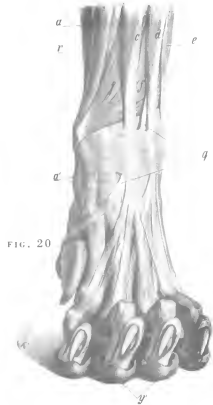
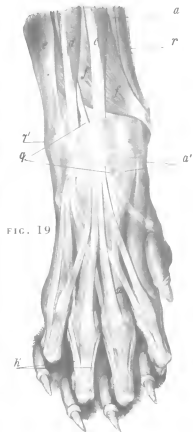
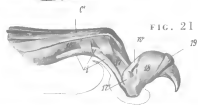
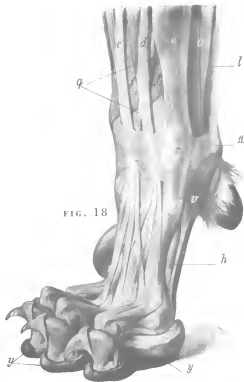
FIG. 15



FIG. 16



FIG. 17



## THE LION . PLATE 10

## FIGURES 23 24 25 26 27

- A—Plantar balls  
 B, B'—Digital balls  
 C—Tarsal balls  
 D—Joint between 1st and 2nd digit  
 E, E'—End of the 3rd digit  
 b—Shoulder-transverse-process muscle  
 c, c', c''—*M. cleidomastoidæus*  
 d—*M. sternomandibularis*  
 e, e'—*M. deltoideus*  
 f, f'—Caput longum et laterale of *M. triceps brachii*  
 h—Posterior part of *M. pectoralis minor*  
 i—Thoracic portion of *M. serratus anterior*  
 j—Cervical portion of *M. serratus anterior*  
 k—*M. latissimus dorsi*  
 l—*M. obliquus abdominis externus*  
 m—*M. serratus posterior*  
 n—*M. gluteus maximus*  
 p—*M. gluteus medius*  
 q, q'—*M. biceps femoris*  
 r—*M. semitendinosus*  
 s—Levator of the tail  
 t—Mus. intertransversarii of the tail  
 x—Cervical portion of *M. rhomboidæus*  
 y—*M. sapraspinatus*  
 13R—13th rib  
 2—Spina scapular  
 3—Acromion  
 5—Olecranon  
 16—Tuber coxæ  
 20—Patella  
 21'—External condyle of tibia  
 28, 28'—*M. quadriceps femoris*  
 31—*M. gastrocnemius*  
 36—Lumbar portion of *M. longissimus dorsi*  
 38—Parts of origin of *M. teres major*  
 13—*M. transversus abdominis*  
 14—Incipient part of the *M. rectus abdominis*  
 15—End of *M. rectus abdominis*  
 16—*M. sartorius*  
 17—*M. tensor fasciæ antebrachii*  
 18—*M. abductor cruris anterior*

FIG. 23

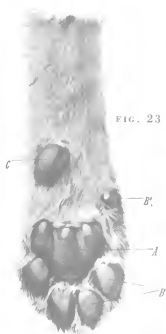


FIG. 24



FIG. 26

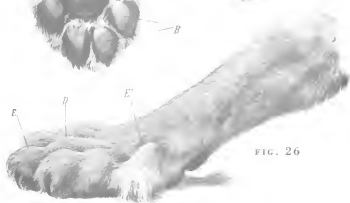


FIG. 25

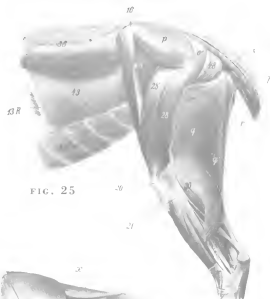


FIG. 27



## THE LION - PLATES 11 12

## FIGURES 28 29 30 31 32 33 34 35

- a, a'—*M. tibialis anterior*  
 b, b'—*M. extensor digitorum longus*  
 c—*M. peroneus longus*  
 d—*M. extensor digitorum pedis lateralis*  
 d'—*M. peroneus brevis*  
 e—*M. flexor hallucis longus*  
 e'—*A tendinous ligament*  
 e''—*Tendon of the M. tibialis posterior*  
 f—*End part of the Mm. gastrocnemii*  
 f'—*Tendo Achillis*  
 f''—*M. soleus*  
 g, g'—*Superficial flexor tendon*  
 h—*Mm. interossei*  
 i—*Annular ligaments*  
 k—*Abductor of the 5th toe*  
 m—*M. flexor digitorum pedis longus*  
 n—*Lateral ligament of the ankle joint*  
 o'—*Fascia lata*  
 q, q'—*End of the M. biceps femoris*  
 r—*End of the M. semitendinosus*  
 r', r''—*Tendons at end of M. semitendinosus*  
 w—*End of the M. gracilis*  
 x—*End of the M. sartorius*  
 z—*M. extensor digitorum pedis brevis*  
 18—*End of the os femoris*  
 20—*Patella*  
 21—*Tibia*  
 21'—*Internal condyle of the tibia*  
 21''—*Lower end of the fibula*  
 21'''—*Internal malleolus of tibia*  
 22—*Tarsus*  
 23—*Fibula*  
 24—*Tuber calcanei*  
 25—*Metatarsus*  
 28—*Swelling of the tibia*  
 29—*Sesamoid bones of the metatarsal digital points*  
 30—*Phalanx prima*  
 31—*Phalanx secunda*  
 32—*Phalanx tertia*

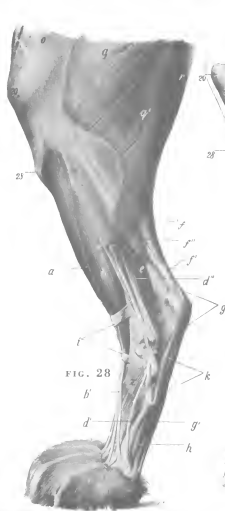






FIG. 32

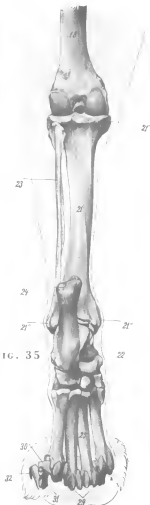


FIG. 33

FIG. 34



FIG. 35



## THE LION - PLATES 13 14 15

## FIGURES 36 37 38 39 40 41 42 43 44 45 46

- b—*M. levator nasolabialis*  
 c—*M. cleidomastoideus*  
 d, d'—*M. sternomandibularis*  
 e—End part of the *M. sternohyoideus*  
 f—Part of the *M. caninus* s. *M. pyramidalis nasi*  
 g—*M. zygomaticus*  
 g'—*M. malaris*  
 h—*M. buccinator*  
 i—*M. quadratus s. depressor labii inferioris*  
 k—*M. orbicularis oris*  
 m—*M. masseter*  
 n—Depressor of the auricle  
 p—*M. scutularis*  
 p'—Muscles of the ear  
 q—Abductor of the auricle  
 r—Levator of the auricle  
 u, u', u''—*M. corrugator supercilii*  
 v—End of the two-bellied muscle  
 w—*M. myohyoideus*  
 y—Cervical subcutaneous muscle  
 z—*M. temporalis*  
 z'—*M. occipitalis*  
 \*—Atlas  
 1—Seat of the auricle  
 2, 2'—Anterior edge of the auricle  
 3—Posterior edge of the auricle  
 4—*Incisura intertragica*  
 9—Arcus zygomaticus  
 11—Processus coronoides of the lower jawbone  
 12—Frontal process of the malar bone  
 12'—Zygomatic process of the frontal bone  
 13—Os occipitale  
 13'—Crest and spine of the os occipitale  
 14—Os parietale  
 14'—Crest and spine of the os parietale  
 15—Crest of os parietale  
 16—Os temporale  
 17—Meatus acusticus externus  
 18—Temporo-maxillary joint  
 19—Orbita  
 20—Os zygomaticum  
 21—Os lacrimale  
 22—Os nasale  
 23—Os incisum  
 24—Upper incisor teeth  
 24'—Lower incisor teeth  
 25—Upper canine tooth  
 26—Maxilla  
 27—Facial crest  
 28—Unpaired part of the lower jawbone  
 28'—Paired part of the lower jawbone  
 29—Lower canine tooth  
 30—Branch of the lower jaw  
 30'—Processus angularis  
 31—Condyle process of the lower jaw  
 32—1st cervical vertebra (Atlas)  
 33—2nd cervical vertebra  
 34—Lateral cartilage of the nose  
 34'—Nose cartilage  
 35—Cartilaginous epiphysis  
 36—Lymph gland of the oropharynx  
 38—*V. jugularis*  
 39—*V. facialis*  
 44—Glandula parotis  
 50—Glandula submaxillaris  
 59—Prominence corresponding to the pomum  
     Adami in the human  
 63—Laryngeal muscles  
 64—End of the *M. sternothyroideus*  
 65—Thyrohyoid muscles



FIG. 36



FIG. 38

FIG. 37

FIG. 39



FIG. 41

FIG. 42

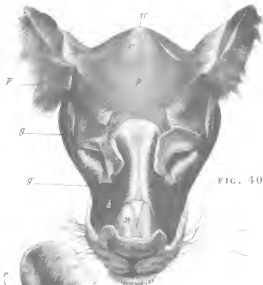


FIG. 40

THE LION PLATE 15

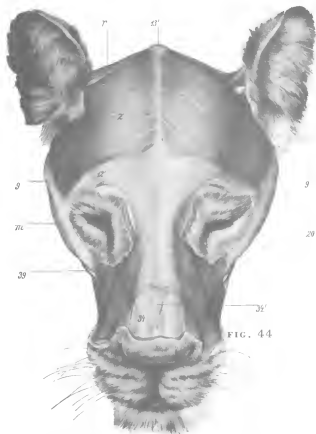


FIG. 44

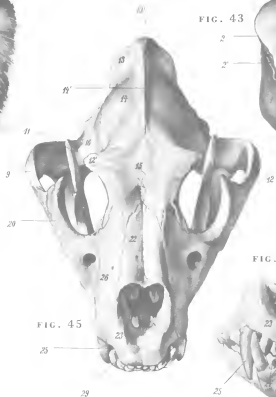


FIG. 45

FIG. 43

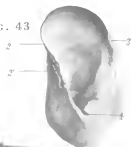
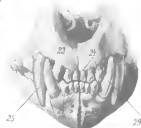


FIG. 46



## THE LION - PLATE 16

## FIGURE 47

a—Groove of the lips  
 b—Gum  
 c—Mucous membrane of the cavity  
 d—Tip of the tongue

e—Gap between teeth  
 f—Mucous membrane of the cavity  
 g—Upper left canine tooth (*dens caninus*)  
 g'—Lower left canine tooth

h—Upper left incisor tooth (*dens*)  
 h'—Lower left incisor teeth  
 i—2nd lower molar tooth

FIG. 47



## The Cow and Bull



## THE COW AND BULL - PLATES 1 2 3 4

## FIGURES 1 2 3 67 68 69 70 71

- a—*M. trapezius*  
 b—Shoulder-transverse-process muscle  
 c, c'—*M. brachiocephalicus*  
 d—*M. sternomandibularis*  
 d'—*M. sternomastoideus*  
 e, e'—*M. deltoideus*  
 f, f'—*M. triceps brachii*  
 g—*M. pectoralis major*  
 h, h'—*M. pectoralis minor*  
 i—Thoracic portion of *M. serratus anterior*  
 i'—Cervical portion of *M. serratus magnus*  
 k—*M. latissimus dorsi*  
 l—*M. obliquus abdominis externus*  
 l'—*Aponeurosis*  
 m—*M. serratus posterior*  
 m'—Lumbo-dorsal fascia  
 n—A small part of origin of the *M. obliquus abdom. internus*  
 o—*M. tensor fasciae latae*  
 o'—Fascia lata of thigh  
 p—*M. gluteus medius*  
 q, q'—*M. biceps femoris*  
 r—*M. semitendinosus*  
 s, t—Short and long levators of the tail  
 u—Abductor of the tail  
 v'—*M. biceps brachii*  
 w—*M. splenius*  
 x—*M. rhomboideus*  
 y—End of *M. longissimus capitis*  
 z—*M. supraspinatus*  
 z'—*M. infraspinatus*  
 z''—Broad tendon over the humerus  
 1H—1st cervical vertebra (Atlas)  
 7H—7th cervical vertebra  
 K—Sacrum  
 6k—6th costal cartilage  
 1L—1st lumbar vertebra  
 6L—6th lumbar vertebra  
 1R—1st thoracic (dorsal) vertebra  
 6R—6th rib  
 12R—12th thoracic (dorsal) vertebra  
 13R—13th rib  
 1S—1st caudal vertebra  
 \*—Alar border of the atlas  
 1—Scapula  
 1'—Border of the cartilago scapulae  
 2—Spina scapulae  
 3—Acromion  
 4—Humerus  
 4'—Epicondyle  
 5—Tuberculum majus  
 6—Rotator  
 7—Ulna  
 8—Olecranon  
 9—Radius  
 10—Carpus  
 11—Os piniforme  
 12—Metacarpus  
 13—Phalanges manus  
 14—Sternum  
 14—Manusrium sterni  
 11'—Cartilago xiphoidea  
 15—Ossa pelvis  
 16—Tuber coxae  
 16'—Tuber sacrale  
 17—Tuber ischiadicum  
 18—Os femoris  
 19—Trochanter major  
 20—Patella  
 21—Tibia  
 21'—External condyle of the tibia  
 22—Tarsus  
 23—Os malleolare  
 24—Tuber calcanei  
 25—Metatarsus  
 26—Phalanges pedis  
 27—Muscles of the ear  
 28—*M. quadriceps femoris*  
 28'—*M. rectus femoris*  
 29—*M. semimembranosus*  
 30—*Mm. gastrocnemii*  
 31—Broad pelvic ligament  
 32—Plane of the cross section of the neck shown in Figures 70 (cow) and 71 (bull) on Plate 4  
 33—Transverse processes of the cervical vertebrae  
 34—*V. jugularis*  
 35, 36, 37—Large veins clearly protruding through the outer skin

THE COW AND BULL PLATE 1



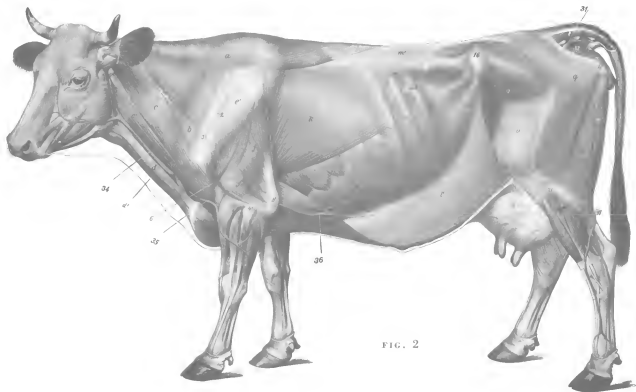


FIG. 2

THE COW AND BULL PLATE 3

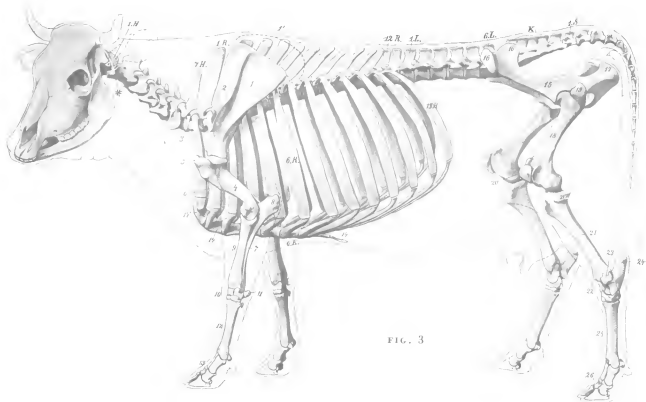


FIG. 3

THE COW AND BULL PLATE 4



FIG. 70  
(COW)



FIG. 71  
(BULL)



## THE COW AND BULL · PLATES 5 6

## FIGURES 4 5 6 7 8 9

a—*M. trapezius*  
 b—Shoulder-transverse-process muscle  
 c, c'—*M. brachiocephalicus*, c cervical, c'  
     mastoid part  
 d—*M. sternomandibularis*  
 d'—*M. sternomastoideus*  
 e—End of the *M. sternohyoideus*  
 g—*M. pectoralis major*  
 i—*V. jugularis*  
 i'—Cutaneous vein  
 k—Larynx  
 p—*M. gluteus medius*  
 q, q'—*M. biceps femoris*  
 r—*M. semitendinosus*  
 s—Levator of the tail

u—Abductor of the tail  
 v—*M. semimembranosus*  
 w—*M. gracilis*  
 x—Posterior-upper margin of the broad petiole  
     Ligament  
 1—Scapula  
 2—Spina scapulae  
 3—Acromion  
 4—Humerus  
 5—Tuberculum majus of the humerus  
 6—Rotator of the humerus  
 9—Radius  
 14, 14'—Sternum & manubrium sterni  
 1R—1st rib

7H—7th cervical vertebra  
 \*—Ala border of the 1st cervical vertebra (Atlas  
     border)  
 16—Tuber coxae  
 17—Tuber ischiadicum  
 18—Os femoris  
 19—Trochanter major of the os femoris  
 19'—Trochanter minor of the os femoris  
 21—Tibia  
 22—Tarsus  
 24—Tuber calcanei  
 25—Metatarsus  
 26—Phalanges pedis  
 37—Large cutaneous vein on the tibia



FIG. 4



FIG. 5



FIG. 6



FIG. 7



FIG. 8



FIG. 9



## THE COW AND BULL · PLATES 7 8

## FIGURES 10 11 12 13 14 15 16 17 18

- a—*M. extensor carpi radialis*  
 b—*M. extensor digiti tertii proprius*  
 c—*M. extensor digitorum communis*  
 d—*M. extensor digiti quarti proprius*  
 e—*M. extensor carpi ulnaris*  
 e'—Tendon on leg  
 f—*M. abductor pollicis longus*  
 f'—Ulnar head of the flexor carpi ulnaris  
 g—*M. brachialis internus*  
 h—*M. interosseus medius*  
 i—Flexor tendons  
 i'—Assisting flexor tendon  
 k—*M. flexor carpi radialis*  
 l—Humeral head of the *M. flexor carpi ulnaris*  
 m—*M. flexor digitorum sublimis*  
 n—Plane of the cross section of the metacarpus shown in Fig. 18 on Plate 8  
 v—Humerus  
 v'—Extensor condyle of the humerus  
 7—Ulna  
 8—Olecranon  
 9—Radius  
 10—External tuberosity of the radius  
 10—Bones of the carpus  
 11—Os pisiforme  
 12—Skeleton of the metacarpus  
 12'—Swelling of the primary metatarsal bone  
 14—Rudimentary external small metacarpal bone  
 15—Sesamoid bone of the 1st digital joint  
 16—Phalanx prima  
 17—Phalanx secunda  
 18—Phalanx tertia  
 19—Sesamoid bones of the 3rd digital joint

THE COW AND BULL PLATE 7

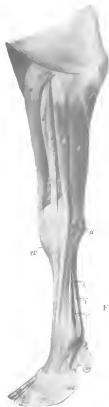


FIG. 10



FIG. 11



FIG. 12



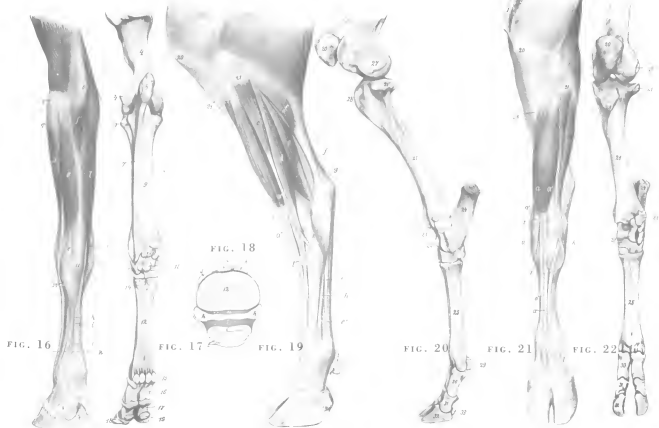
FIG. 13



FIG. 14



FIG. 15



## THE COW AND BULL - PLATES 8 9

## FIGURES 19 20 21 22 23 24 25 26 27 28 29

a, a', a''—*M. extensor digitorum pedis longus*  
 b, b'—*M. tibialis anterior*  
 c—*M. peroneus longus*  
 d—*M. extensor digiti quarti proprius*  
 e, e'—*M. flexor digitorum pedis profundus*  
 e''—*Strengthening tendons for the flexor tendons*  
 f, f'—*Mm. gastrocnemii*  
 g—*Superficial flexor tendon*  
 h—*M. interosseus medius*  
 i—*Annular ligaments*  
 k—*External lateral ligament of the tarsal articulation*

l—*Muscular attachment of tendon from M. interosseus medius to extensor tendon*  
 m—*M. flexor digitorum pedis longus*  
 n—*A ligament of the tarsus*  
 o—*M. polstreus*  
 20—*Patella*  
 21—*Tibia*  
 21'—*External condyle of the tibia*  
 22—*Tarsus*  
 23—*Os malleolare*  
 24—*Tuber calcanei*  
 25—*Metatarsus*

27—*External condyle of the os femoris*  
 28—*Crista tibiae*  
 29—*Sesamoid bones of the 1st digital joint*  
 30—*Phalanx prima*  
 31—*Phalanx secunda*  
 32—*Phalanx tertia*  
 33—*Lower sesamoid bone*  
 34—*Front view of hoof*  
 35—*Bottom view of hoof showing primary and secondary claws*  
 36—*Rear view of hoof showing primary and secondary claws*



FIG. 23



FIG. 24



FIG. 25



FIG. 26



FIG. 28



FIG. 27



FIG. 29

## THE COW AND BULL - PLATES 10 11 12

## FIGURES 30 31 32 33 34 35 40 41 42 44 45 46 47 48 49 50 51 52

- a, a'—*M. levator labii superioris proprius*  
 b—*M. levator nasolabialis*  
 c, c'—Cervical part and mastoid part of the *M. cleidomastoideus*  
 d—*M. sternomandibularis*  
 d'—*M. sternomastoideus*  
 e—End of the *M. sternohyoideus*  
 e'—A thin muscular fasciculus  
 f—*M. caninus s. pyramidalis nasi*  
 g—*M. zygomaticus major*  
 g'—*M. zygomaticus minor s. M. malaris*  
 h—*M. buccinator*  
 i—*M. depressor s. quadratus labii inferioris*  
 k—*M. orbicularis oris*  
 m—*M. masseter*  
 n—Depressor of the ear  
 o—Inferior adductor of the auricle  
 o'—Superior adductor of the auricle  
 o''—Short levator of the auricle  
 p, p'—*M. scutularis*  
 q—Long abductor of the auricle  
 u—*M. frontalis*  
 w—*M. mylohyoideus*  
 z—*M. orbicularis oculi*  
 l—Auricula  
 2—External or posterior edge of the auricle  
 3—Internal or anterior edge of the auricle  
 8—Scutulum  
 9—*Arcus zygomaticus*  
 11—*Proc. coronoides of the lower jawbone*  
 12—Orbital arch  
 13, 13', 13'', 13'''—*Os occipitale*  
 14—*Os parietale*  
 15—*Os frontale*  
 16—*Os temporale*  
 17—*Meatus acusticus externus*  
 18—Temporo-maxillary joint  
 19—Orbita  
 20—*Os zygomaticum*  
 21—*Os lacrimale*  
 22—*Os nasale*  
 23—*Os incisivum*  
 24—Lower incisor teeth  
 24''—Edge of lower incisor tooth of a five-year old animal; this is worn away in a ten-year old animal  
 26—Maxilla  
 27—Facial condyle  
 28—Incisor (unpaired) part of the lower jawbone  
 28'—Molar (paired) part of the lower jawbone  
 30—Branch of the lower jaw  
 30'—Angle of the lower jaw  
 31—Condylod process of the lower jaw  
 32—1st cervical vertebra  
 34—Upper lateral cartilage  
 37—*V. maxillaris externa*  
 38—*I. jugularis*  
 39—*V. facialis*  
 44—*Glandula parotis*  
 45—Chin  
 48—Angle of the mouth  
 49—Muzzle  
 50, 50'—*Glandula submaxillaris*  
 51—Upper eyelid  
 51'—Lower eyelid  
 52—3rd eyelid containing cartilago nictitans  
 53—*Caruncula lacrimalis*  
 54—*Lacus lacrimalis*  
 55, 55'—Eyeball  
 56—Pupil  
 57—Black-brown pigmented marginal band  
 58—Medial eyelid band  
 59—Larynx  
 60—Tip of the tongue  
 61—Large papillae on the mucous membrane of the lips  
 62—Part of the oral cavity floor lying under the tip of the tongue  
 63—Plane of the cross section of the head shown in Fig. 40 on Plate 10  
 64—Plane of the cross section of the head shown in Fig. 41 on Plate 10  
 65—Plane of the cross section of the head shown in Fig. 42 on Plate 10



FIG. 30

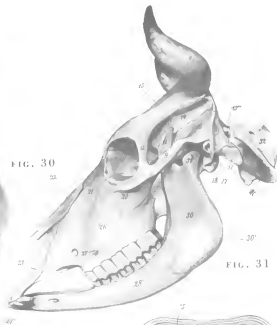


FIG. 31



FIG. 45



FIG. 40

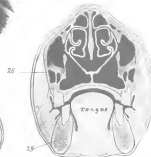


FIG. 41

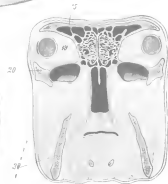


FIG. 42

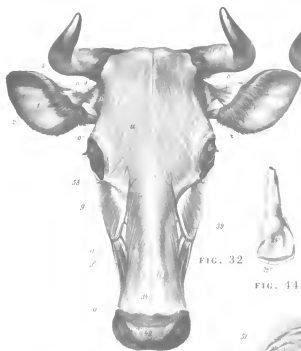


FIG. 32

FIG. 44



FIG. 33

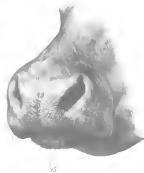


FIG. 49

FIG. 50



FIG. 51

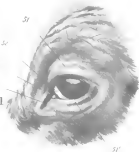
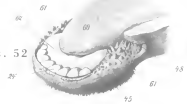


FIG. 52





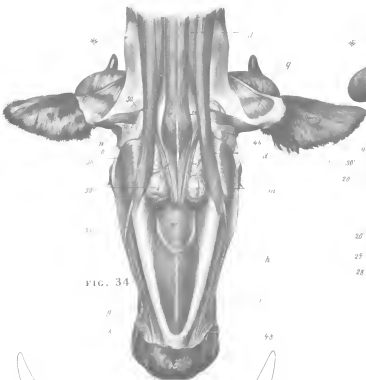


FIG. 34

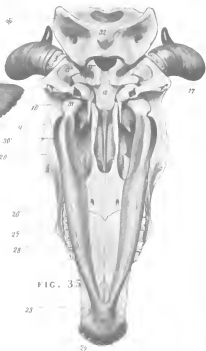


FIG. 35

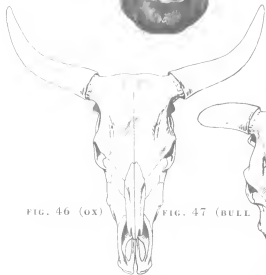


FIG. 46 (OX)



FIG. 47 (BULL)



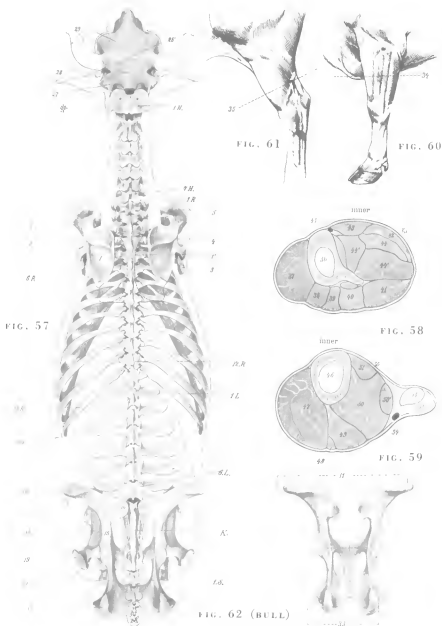
FIG. 48 (COW)

## THE COW AND BULL - PLATES 13 14

## FIGURES 55 56 57 58 59 60 61 62

- a—*M. trapezius*  
 b—Shoulder-transverse process muscle  
 c—*M. cleido-mastoideus*  
 e, e'—*M. deltoideus*  
 k—*M. latissimus dorsi*  
 l—*M. obliquus abdominis externus*  
 m—*M. serratus posterior*  
 m'—Lumbo-dorsal fascia  
 o—*M. tensor fasciae latae*  
 p—*M. glutaeus medius*  
 q—*M. biceps femoris*  
 s, t—Long and short levators of the tail  
 u—Abductor of the tail  
 v—Muscles of the ear  
 w—Free edge of the pelvic ligament  
 1H—1st cervical vertebra  
 7H—7th cervical vertebra  
 1L—1st lumbar vertebra  
 6L—6th lumbar vertebra  
 K—Sacrum  
 1R—1st thoracic vertebra  
 6R—6th rib  
 12R—12th thoracic vertebra  
 13R—13th rib  
 1S—1st caudal vertebra  
 \*—Ala border of atlas  
 1—Scapula  
 1'—Border of the scapular cartilage  
 2—Spina scapulae  
 3—Acromion  
 4—Humerus  
 5—Tuberculum majus of humerus  
 8—Olecranon  
 15—Ilium  
 16—Tuber coxae  
 16'—Tuber sacrale  
 17—Tuber ischindicum  
 18—Femur  
 19—Trochanter major of the femur  
 24—Tuber calcanei  
 27—Os occipitale  
 28—Os parietale  
 28'—Cerebral crest  
 29—Os frontale  
 30—Transverse processes of the lumbar vertebrae  
 31—The two iliac condyles of the pelvis of the bull  
 32—The two articular cavities of the pelvis of the bull  
 33—The two tubera ischii of the pelvis of the bull (compare with pelvis of the cow in Fig. 57 on Plate 14)  
 44—Plane of the cross section of the front leg shown in Fig. 58 on Plate 14  
 45—Plane of the cross section of the hind leg shown in Fig. 59 on Plate 14  
 46—Radius and ulna  
 47—*M. extensor carpi radialis*  
 48—*M. extensor digiti tertii proprius*  
 49—*M. extensor digitorum communis*  
 40—*M. extensor digiti quarti proprius*  
 41—*M. extensor carpi ulnaris*  
 42—*M. flexor carpi ulnaris*  
 44—*M. flexor carpi radialis*  
 44, 44'—*M. flexor digitorum sublimis et profundus*  
 45—1', cephalica unibrachii  
 46—Tibia  
 47—*M. extensor digitorum longus* and *M. tibialis anterior*  
 48—*M. peroneus longus*  
 49—*M. extensor digiti quarti pedis proprius*  
 50, 50'—*M. flexor digitorum pedis profundus*  
 51—*M. flexor digitorum longus*  
 52—Tendo Achillis  
 53—Superficial flexor tendon  
 54—Cutaneous vein  
 55—Outer skin





## THE COW AND BULL · PLATES 15 16

## FIGURES 63 64 65 66 53 54

a—Hair whorl  
 b—Free end of the 6th thoracic vertebra  
 c, c'—Cross-sectioned 8th and 7th rib  
 d—Cross-sectional costal cartilage  
 e—Cross-sectional sternum  
 f—Cross-sectioned outer skin

g—Cross-sectioned muscles  
 h—Thyroid cartilage  
 i—Anterior resp. interior edge of auricle  
 i'—Posterior resp. exterior edge of auricle  
 k—Folds of skin on the inner surface of the auricle  
 l—Cartilagenous external auditory canal

m—Plane of the cross section of the body shown  
 in Fig. 64 on Plate 15  
 1, 2, 3, 4, 5, 6—Schematic diagram of the gait of  
 the cow (dark footprints represent the  
 feet bearing the weight at the moment)



FIG. 63



FIG. 64



FIG. 65



FIG. 66



FIG. 53 (BULL)



FIG. 54 (COW)

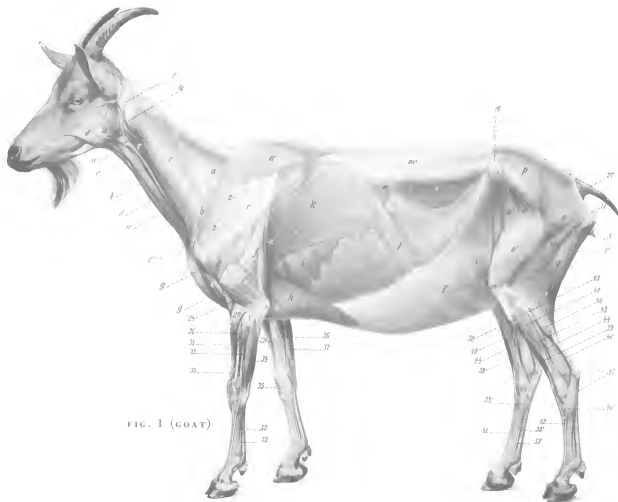
## The Stag, Roe, Goat



## THE STAG, ROE, GOAT · PLATES 1 2 3 4 5 6

## FIGURES 1 2 3 4 5 6

- a, a'—*M. trapezius*  
 b—Shoulder transverse process muscle  
 c—*M. brachiocephalicus* (cephalic section)  
 c'—*M. brachiocephalicus* (cervical section)  
 c''—Lower portion of *M. brachiocephalicus*  
 c'''—*Tendinous band*  
 d, d'—*M. sternomandibularis*  
 e—*M. deltoideus*  
 e'—*M. deltoideus* at the aponeurasis  
 f, f'—*M. triceps brachii*  
 g, g'—*M. pectoralis major s. superficialis*  
 h—Posterior part of *M. pectoralis minor s. profundus*  
 i—End teeth of *M. serratus anterior*  
 k—*M. latissimus dorsi*  
 l—*M. obliquus abdominis externus*  
 l'—*Aponeurasis*  
 m—*M. serratus posterior*  
 m'—*Lumbo-dorsal fascia*  
 n—A small part of origin of *M. obliquus abdominis internus*  
 a, a''—*M. tensor fasciae latae*  
 a'—Broad thigh portion of the *M. tensor fasciae latae*  
 p—*M. glutaeus medius*  
 q, q'—*M. biceps femoris*  
 r—*M. semitendinosus*  
 s—Edge portion of *M. semimembranosus*  
 t—Edge portion of *M. sternothyroideus*  
 u—*M. omohyoideus*  
 v—*M. sternohyoideus*  
 w—A part of *M. scalenus*  
 x—Muscle slip from *brachiocephalus* to *pectoralis major*  
 y—Edge portion of *M. tensor fasciae antebrachii*  
 z—*M. tensor fasciae antebrachii*  
 z'—Cervical subcutaneous muscle  
 1H—1st cervical vertebra (*Atlas*)  
 7H—7th cervical vertebra  
 K—Sacrum  
 6K—Costal cartilage  
 1L—1st lumbar vertebra  
 6L—6th lumbar vertebra  
 7L—7th lumbar vertebra  
 1R—1st thoracic (dorsal) vertebra  
 6R—6th rib  
 12R—12th thoracic (dorsal) vertebra  
 13R—13th rib  
 S—Caudal vertebra  
 \*—Ala of *Atlas*  
 1—Scapula  
 1'—Border of scapular cartilage  
 2—Spina scapulae  
 3—Acromion  
 4—Humerus  
 1'—External epicondyle  
 5—External tuberosity  
 6—Rotator of humerus  
 7—Ulna  
 8—Olecranon  
 9—Radius  
 10—Carpus  
 11—Os pisiforme  
 12, 12'—Metacarpus  
 13—Phalanx prima  
 13'—Phalanx secunda  
 13''—Phalanx tertia  
 14—Sternum  
 14'—Manubrium sterni  
 14''—Cartilago xiphoidae  
 15—Osse pelvis  
 16—Tuber coxae  
 16'—Tuber sacrale  
 17—Tuber ischidicum  
 18—Os femoris  
 19—Trochanter major  
 20—Patella  
 21—Tibia  
 21'—External epicondyle of tibia  
 21''—Swelling of tibia  
 22—Tarsus  
 23—Os malleolare  
 24—Tuber calcanei  
 25, 25'—Metatarsus  
 26—Phalanx prima  
 26'—Phalanx secunda  
 26''—Phalanx tertia  
 27—Free border of pelvic ligament  
 28—End of *M. brachialis internus*  
 29—*M. extensor carpi radialis*



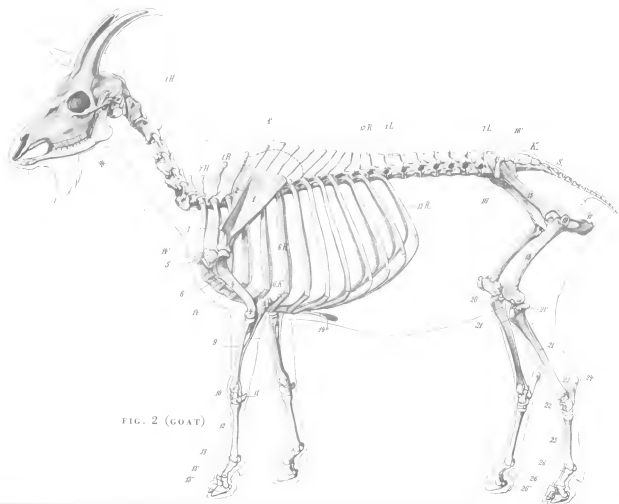


FIG. 2 (GOAT)

THE STAG, ROE, GOAT PLATE 7



FIG. 3 (STAG)

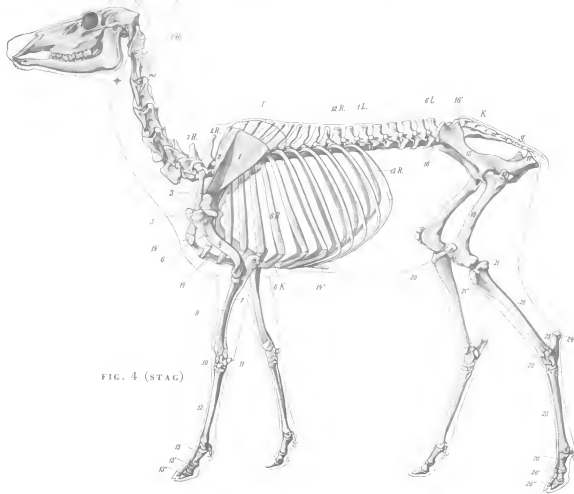


FIG. 4 (STAG)



FIG. 5 (ROE)

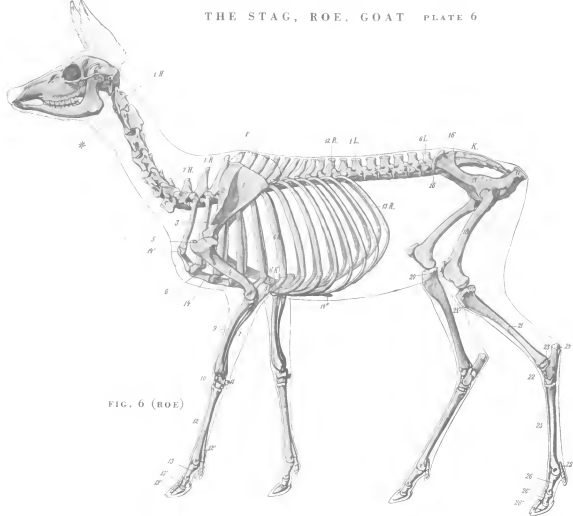


FIG. 6 (ROE)

## THE STAG. ROE. GOAT - PLATES 7 8

## FIGURES 7 8 9 10 11 12 13 14 15 16 17

- a—*M. levator labii superioris proprius*  
 b—*M. levator nasolabialis*  
 d, d'—*M. sternomandibularis*  
 e—End portion of *M. sternohyoideus*  
 f—*M. caninus s. pyramidalis nasi*  
 g—*M. zygomaticus*  
 g'—*M. malaris*  
 h—*M. buccinator*  
 i—*M. depressor s. quadratus labii inferioris*  
 m—*M. masseter*  
 n—Depressor of the auricle  
 o'—Inferior adductor of the auricle  
 o''—Superior adductor of the auricle  
 p, p'—*M. scutularis*  
 q—Long abductor of the auricle  
 w—*M. mylohyoideus*  
 y—Tendon of *M. longissimus capitis*  
 z—*M. orbicularis oculi*  
 z'—*M. corrugator supercilii*  
 \*—Ala of atlas  
 l—Auricula  
 2—External resp. posterior edge of auricle  
 3—Internal resp. anterior edge of auricle  
 8—Scutellum  
 9—Arcus zygomaticus  
 11—Processus coronoideus of the lower jawbone  
 12—Orbital arch  
 13, 13', 13'', 13'''—*Oss occipitale*  
 14—*Oss parietale*  
 15—*Oss frontale*  
 15'—Base of antlers  
 15''—Horny process of goat  
 16—*Oss temporale*  
 17—Meatus acusticus externus  
 18—Temporo-maxillary articulation  
 19—Orbita  
 20—*Oss zygomaticus*  
 21, 21', 21''—*Oss lacrimale*  
 22—*Oss nasale*  
 23—*Oss incisum*  
 24'—Lower incisor teeth  
 25—Upper canine tooth of the stag  
 26—Maxilla  
 27—Facial crest  
 28—Canine tooth (unpaired) part of the lower jawbone  
 28'—Molar tooth (paired) part of the lower jawbone  
 30—Branch of the lower jaw  
 30'—Mandibular condyle  
 31—Condyle process of the lower jaw  
 38—End of the jugular vein  
 39—*V. facialis*  
 44—Glandula parotis  
 50—Lower end of glandula submaxillaris  
 51—Lower end of metatarsal bone  
 52—Phalanx prima  
 53—Phalanx secunda  
 54—Phalanx tertia  
 55—Lower sesamoid bone  
 56—An upper sesamoid bone  
 57—1st toe joint  
 58—2nd toe joint  
 59—3rd toe joint  
 60—Extensor tendon  
 61—*M. interosseus*  
 62—Superficial flexor tendon  
 63—Deep flexor tendon  
 64—Outer skin  
 65, 65'—Horny wall of the claw  
 66—Plantar surfaces of the claws  
 67—Hind claws



- 29'—*Tendon of brachiocephalicus*  
 30—*M. extensor digiti tertii proprius*  
 31—*M. extensor digitorum communis*  
 32—*A thin muscle only existing with the next*  
 33—*M. extensor digiti quarti proprius*  
 34—*M. extensor carpi ulnaris*  
 35—*M. abductor pollicis longus*  
 36—*M. flexor carpi radiolii*  
 37—*M. flexor carpi ulnaris*  
 38—*M. tibialis anterior*  
 38'—*Tendon of M. tibialis anterior*  
 39—*M. extensor digitorum pedis longus*  
 40, 40'—*M. peroneus longus*  
 41—*Tendon*  
 42—*Tendon*  
 43—*M. extensor digiti quarti pedis proprius*  
 44—*M. flexor digitorum profundus*  
 45—*M. soleus*  
 46—*Mm. gastrocnemii*  
 46'—*Tendo Achillis*  
 47—*Superficial flexor tendon*  
 48—*M. popliteus*  
 49—*M. flexor digitorum pedis longus*  
 50—*M. tibialis posterior*  
 51—*M. masseter*  
 52—*Superficial and deep flexor tendon of anterior metatarsus*  
 52'—*Superficial and deep flexor tendon of metatarsus*  
 53—*M. interosseus of anterior metatarsus*  
 53'—*M. interosseus of posterior metatarsus*

THE STAG. ROE. GOAT PLATE 7

FIG. 7 (STAG)

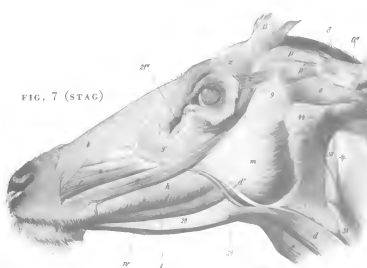


FIG. 8 (ROE)



FIG. 9 (STAG)

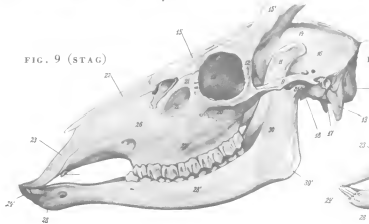
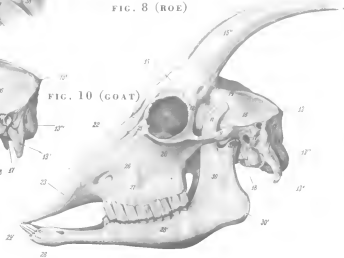


FIG. 10 (GOAT)



# THE STAG, ROE, GOAT PLATE 8

FIG. 11 (STAG)



FIG. 12 (GOAT)



FIG. 13 (GOAT)



FIG. 14 (STAG)

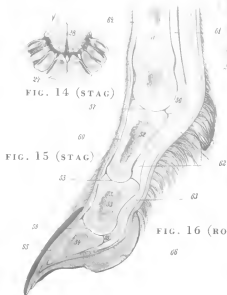


FIG. 15 (STAG)



FIG. 16 (ROE)

FIG. 17 (STAG)

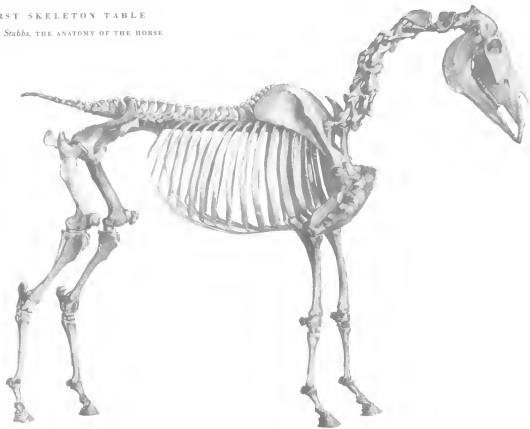


## Appendix

THE HORSE (STUBBS—PLATE 1)

FIRST SKELETON TABLE

*from Stubbs, THE ANATOMY OF THE HORSE*



THE HORSE (STUBBS—PLATE 2)

SECOND AND THIRD SKELETON TABLES

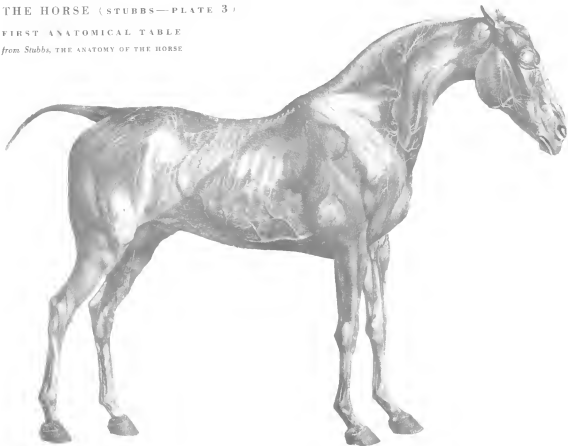
*from Stubbs, THE ANATOMY OF THE HORSE*



THE HORSE (STUBBS—PLATE 3)

FIRST ANATOMICAL TABLE

*from Stubbs, THE ANATOMY OF THE HORSE*



THE HORSE (STUBBS—PLATE 4)

SECOND ANATOMICAL TABLE

*from Stubbs, THE ANATOMY OF THE HORSE*

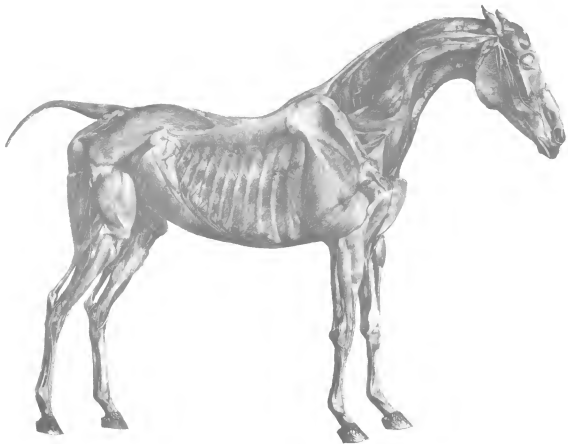




THE HORSE (STUBBS—PLATE 5)

THIRD ANATOMICAL TABLE

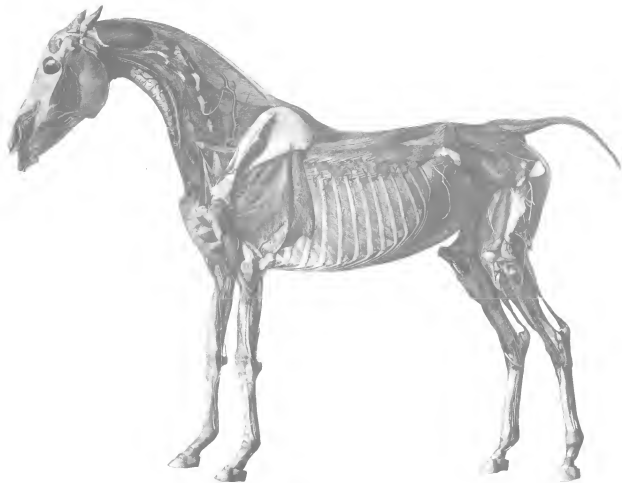
*from Stubbs, THE ANATOMY OF THE HORSE*



THE HORSE (STUBBS—PLATE 6)

FOURTH ANATOMICAL TABLE

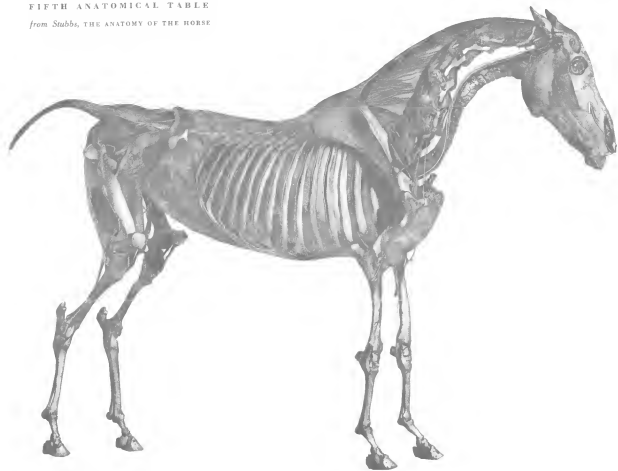
*from Stubbs, THE ANATOMY OF THE HORSE*



THE HORSE (STUBBS—PLATE 7)

FIFTH ANATOMICAL TABLE

*from Stubbs, THE ANATOMY OF THE HORSE*



THE HORSE (STUBBS—PLATE 8)

SIXTH AND SEVENTH ANATOMICAL TABLES

*from Stubbs, THE ANATOMY OF THE HORSE*



THE HORSE (STUBBS—PLATE 9)

EIGHTH AND NINTH ANATOMICAL TABLES

*from Stubbs, THE ANATOMY OF THE HORSE*



THE HORSE (STUBBS—PLATE 10)

TENTH AND ELEVENTH ANATOMICAL TABLES

*from Stubbs, THE ANATOMY OF THE HORSE*



THE HORSE (STUBBS—PLATE 11)

TWELFTH AND THIRTEENTH ANATOMICAL TABLES

*from Stubbs, THE ANATOMY OF THE HORSE*



THE HORSE (STUBBS—PLATE 12)

FOURTEENTH AND FIFTEENTH ANATOMICAL TABLES

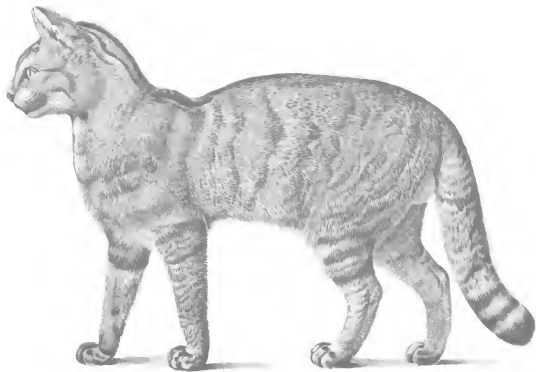
*from Stubbs, THE ANATOMY OF THE HORSE*





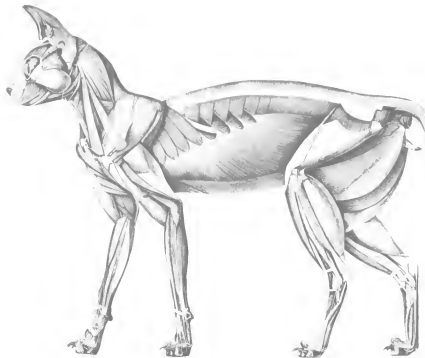
THE CAT ( STRAUS-DURCKHEIM — PLATE I )

*from Straus-Durckheim, ANATOMIE DESCRIPTIVE ET COMPARATIVE DU CHAT*



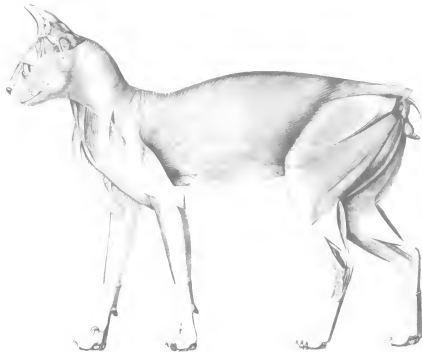
THE CAT (STRAUS-DURCKHEIM — PLATE 2)

*from Straus-Durckheim, ANATOMIE DESCRIPTIVE ET COMPARATIVE DU CHAT*



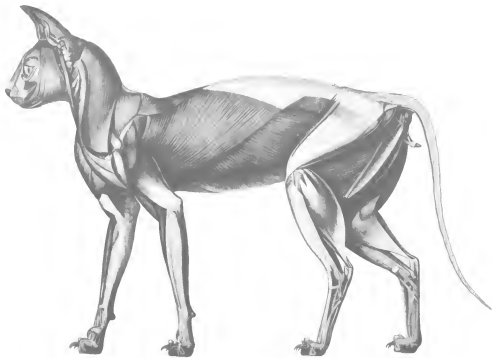
THE CAT (STRAUS-DURCKHEIM—PLATE 3)

*from Straus-Durckheim, ANATOMIE DESCRIPTIVE ET COMPARATIVE DU CHAT*



THE CAT ( STRAUS-DURCKHEIM—PLATE 4 )

*from Straus-Durckheim, ANATOMIE DESCRIPTIVE ET COMPARATIVE DU CHAT*



## THE MONKEY. SEAL. HARE.

## RAT KANGAROO. FLYING SQUIRREL. AND BAT (CUVIER)

IDENTIFYING SYMBOLS USED IN THE  
FOLLOWING CUVIER PLATES

## MUSCLES OF THE HEAD

- t—temporal  
 o—orbicularis oculi  
 l—dilator naris lateralis  
 z—zygomaticus minor  
 y—zygomaticus  
 m—masseter  
 b—buccinator  
 l—orbicularis oris  
 q—digastricus  
 r—parotido-auricularis  
 r<sup>2</sup>—scutulo-auricularis superioris  
 s—scutulo-auricularis inferioris  
 s<sup>2</sup>—scutularis  
 a<sup>1</sup>—auditory passage  
 a<sup>2</sup>—auditory passage

## MUSCLES OF THE NECK AND SHOULDER

- a—trapezias (in monkey); brachiocephalicus  
 cleido-cervicalis and cleido-  
 mastoideus (in seal)  
 a<sup>1</sup>, a<sup>2</sup>—trapezius  
 b—sterno-mastoideus sterno-cephalicus  
 b<sup>1</sup>—sterno-mandibularis sterno-cephalicus  
 c—omo-hyoideus  
 d—omo  
 k<sup>1</sup>—deltoid  
 g—mylo-hyoideus  
 x—sterno-thyro-hyoideus  
 L, L<sup>3</sup>—complexus

## MUSCLES OF THE BODY

- 5<sup>1</sup>—cutaneus maximus, scapular portion (skin  
 muscle)  
 5<sup>2</sup>—cutaneus maximus, dorsal portion (skin  
 muscle)  
 5<sup>3</sup>—cutaneus maximus, lateral portion (skin  
 muscle)  
 5<sup>4</sup>—cutaneus maximus, ventral portion (skin  
 muscle)  
 7—external intercostal  
 8—internal intercostal  
 10, 11—small denticulated muscle  
 13, 13<sup>2</sup>—obliquus abdominis externus  
 14—transversus abdominis  
 15—rectus abdominis  
 a—gluteus maximus  
 a<sup>1</sup>—gluteus medius  
 c<sup>2</sup>—rhomboides  
 g—serratus thoracis  
 i—latissimus dorsi  
 j—superficial pectoral  
 j<sup>1</sup>—posterior deep pectoral  
 j<sup>2</sup>—anterior pectoral  
 k—deltoid  
 n—subscapularis  
 o—infraspinatus  
 r—supraspinatus  
 s<sup>1</sup>—testicle  
 6—scalenus, exterior portion  
 6<sup>1</sup>—scalenus, middle portion

6<sup>2</sup>—scalenus, interior portion

- A—spinalis dorsi  
 B—longissimus dorsi  
 C—longissimus costarum  
 D—longissimus cervicis

MUSCLES OF THE FRONT LEG  
(OUTSIDE VIEW)

- t, t<sup>2</sup>—triceps (long head)  
 t<sup>2</sup>—triceps (lateral head)  
 v—long supinator  
 v<sup>1</sup>—short supinator  
 s—exterior corpi radialis  
 z—common digital extensor  
 z<sup>2</sup>—extensor of little finger  
 s—ulnaris lateralis  
 c—flexor carpi ulnaris  
 c<sup>2</sup>—long extensor of thumb  
 m—deep flexor  
 c<sup>1</sup>—long common flexor

MUSCLES OF THE FRONT LEG  
(MEDIAL VIEW)

- i—long abductor of the thumb  
 j—pectoral  
 L—long common flexor  
 m—short abductor of the thumb  
 n—subscapularis

m—*teres major*

r—*biceps*

t, t<sup>1</sup>—*triceps (long head)*

t<sup>2</sup>—*triceps (lateral head)*

u—*extensor of forearm*

v—*brachialis*

#### MUSCLES OF THE HAND

p—*adductor of thumb*

v<sup>1</sup>—*interosseus dorsalis*

e<sup>2</sup>—*extensor indicis*

j—*extensor pollicis brevis*

b—*abductor digiti quinti*

#### MUSCLES OF THE BACK LEG (SUPERFICIAL)

a<sup>1</sup>—*gluteus medius*

a—*gluteus maximus*

q<sup>1</sup>, q<sup>2</sup>—*biceps femoris*

r—*semi-tendinosus*

s—*semi-membranosus*

x—*fascia lata*

g—*sphincter ani externus*

m—*vastus lateralis*

p—*rectus femoris*

#### MUSCLES OF THE BACK LEG (MEDIAL VIEW)

a—*gastrocnemius*

l—*iliopsoas*

p—*rectus femoris*

n—*vastus medialis*

s—*semi-membranosus*

f—*adductor brevis*

u—*gracilis*

j—*extensor digitorum longi*

#### MUSCLES OF THE BACK LEG (DEEPER)

e—*peroneus longus*

e<sup>1</sup>—*peroneus tertius*

e<sup>2</sup>—*peroneus brevis*

c—*long common extensor*

c<sub>2</sub>—*long digital extensor*

d—*short common extensor*

#### MUSCLES OF THE FOOT

a—*gastrocnemius*

e, e<sup>1</sup>—*peroneus longus*

e<sup>2</sup>—*peroneus brevis*

n—*interossei dorsales*

v—*adductor obliquus*

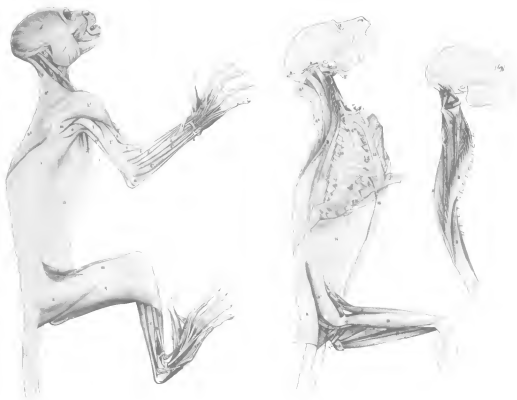
v<sup>1</sup>—*adductor transversus*

u—*extensor hallucis brevis*

j—*extensor digitorum longi*

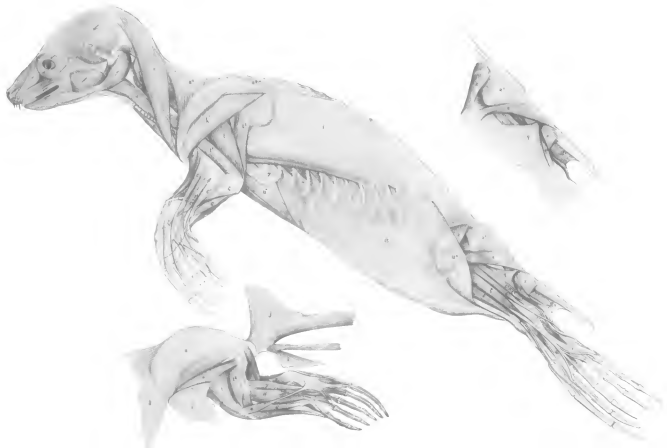
## THE MONKEY (CUVIER)

*from Cuvier, Laurillard, ANATOMIE COMPARÉE*



## THE SEAL (CUVIER)

*from Cuvier, Laurillard, ANATOMIE COMPARÉE*





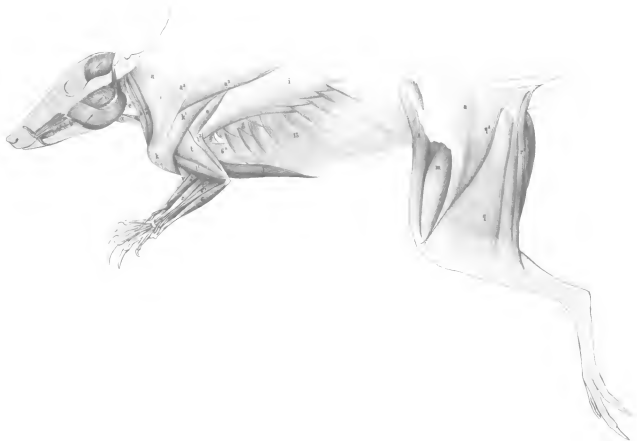
## THE HARE (CUVIER)

*from Cuvier, Laurillard, ANATOMIE COMPARÉE*



## THE RAT KANGAROO ( CUVIER )

*from Cuvier, Laurillard, ANATOMIE COMPARÉE*



# THE FLYING SQUIRREL (CUVIER)

*from Cuvier, Laurillard. ANATOMIE COMPARÉE*



## THE BAT (CUVIER)

*from Cuvier, Laurillard, ANATOMIE COMPARÉE*



## Bibliography

For those who wish to go beyond the necessarily limited scope of this book, this annotated list of books is included. Unfortunately, some of the better anatomical works are not easily accessible. Some are out of print, and many are in foreign languages. The volumes selected are those which have, for one reason or another, appealed to me. Most of the works are non-technical or so well illustrated that a large part of them can be grasped by the artist visually.

### ANATOMY

*Baum, Hermann; Zietzmann, Otto.* HANDBUCH DER ANATOMIE DES HUNDES. Berlin, 1936.

Very good material on the dog.

*Boas, J. E. V.; Paulli, Simon.* THE ELEPHANT'S HEAD. Carlsburg Fund. Copenhagen, 1908.

Studies in the comparative anatomy of an Indian elephant's head and those of other mammals. Very fine plates, many in full color. 2 volumes.

*Bronn, H. C.* KLASSEN UND DRDUNGEN DES THIER-REICHS. Leipzig, 1876.

A good and extensive series of comparative skeletons as well as some good muscle plates.

*Brown, Lewis S.* ANATOMY OF THE HORSE FOR ARTISTS. New York, 1948.

A comparison of the human and horse forms showing structure, proportion, and action. Contains measurements for light and heavy breeds.

*Camper, Pierre.* DESCRIPTION ANATOMIQUE D'UN ÉLÉPHANT, MÂLE. Paris, 1802.

*Cuvier, George; Laurillard M.* ANATOMIE COMPARÉE. Paris, 1849.

Contains fine anatomical drawings of many different animals from man to mouse, bat to elephant. One of the best comparative anatomies for artists. The volume from which the plates in this book were taken.

*Ellenberger, W.; Baum, H.; Dittich, H.* HANDBOOK OF ANATOMY OF ANIMALS FOR ARTISTS. London, 1901. 5 vols.

Text on the horse in English, French, and German; text on other animals in German. This book rightly remains the standard in the field. Source of the plates in the present volume.

*Ellenberger, W.; Baum, H.* HANDBUCH DER VERGLEICHENDEN ANATOMIE DER HAUSTIERE. Berlin, 1908.

Excellent book on the anatomy of bovines.

- ANATOMIE DES HUNDES. Berlin, 1891.  
Excellent work on the anatomy of dogs.
- ANATOMIE DES PFERDES. Berlin, 1893.  
Excellent work on the anatomy of horses.
- Friedenthal, H.* DAS HAARKLEID DES MENSCHEN. Jena, 1908.  
Shows the hair patterns of men and animals. Many plates in color.
- BEITRÄGE ZUR NATURGESCHICHTE DES MENSCHEN. Jena, 1910.
- TIERHAARATLAS. Jena, 1911. 5 volumes.  
Good for skin and fur textures. Many color plates.
- Knight, C. R.* ANIMAL ANATOMY AND PSYCHOLOGY. New York, 1947.  
A good work on comparative anatomy by a master draftsman.
- Leisering, A. G. T.* ATLAS DER ANATOMIE DES PFERDES. Leipzig, 1861.  
Some Ellenberger anatomy plates of domestic animals; dogs, horses, pigs, cows.
- Matthew, W. D.; Chubb, S. H.* EVOLUTION OF THE HORSE. American Museum of Natural History, Guide Leaflet Series 36.  
One of the best brief accounts of the evolution of the horse.  
Contains photographs of skeletons of both early and recent horse forms found in the American Museum of Natural History.  
Mr. Chubb spent over 45 years at the museum on equine osteology and is one of the great authorities.
- Pander, C. H.* ATLAS VERGLEICHENDE OSTEOLOGIE. Bonn, 1828.  
Bone structure of many animals as shown in relation to the outer form.
- Reighard, Jacob; Jennings, H. S.* ANATOMY OF THE CAT. New York, 1902.
- Ruge, George.* DIE GESICHTSMUSKULATUR DER PRIMATEN. Leipzig, 1887.
- Schmalz, Reinhold.* ATLAS DER ANATOMIE DES PFERDES. Berlin, 1927.
- Schaeffer, Maximilian.* TIERFORMEN (ATLAS). Berlin, 1899. 2 volumes.  
Comparative anatomy.
- Sisnor, S.* THE ANATOMY OF THE DOMESTIC ANIMALS. Third edition revised by J. D. Grossman. Philadelphia, 1938.  
Standard work on anatomy for veterinarians. Contains many Ellenberger plates and excellent photographs. Includes the horse, cow, dog, sheep, pig, and an appendix on the chicken.  
The best source of information on the action of muscles.
- Straus-Durckheim, Hercule.* ANATOMIE DESCRIPTIVE ET COMPARATIVE DU CHAT. Paris, 1845.  
Complete and excellent work on the cat. Many plates. This is the volume from which the cat plates in this book were taken.
- Stubbs, George.* THE ANATOMY OF THE HORSE. London, 1776. Reprinted London, 1938.  
A monumental work on the horse. This is the volume from which the Stubbs plates in this book were taken.
- Tschaggery, Edmond.* ATLAS D'ANATOMIE DE L'ESPÈCE BOVINE. Bruxelles, 1921. 2 volumes.  
Plates on domestic cattle.
- Wolton, Elizabeth.* THE CAMEL. London, 1865.  
Anatomy and proportions of the camel.

## ANIMAL MOTION

*Houell, A. Brazier.* SPEED IN ANIMALS. Chicago, 1944.

A very good work on the way animals move. Rather technical.

*Muybridge, Eadweard.* ANIMALS IN MOTION. London, 1899. Reprinted in 1925. (Dover reprint)

The classic work for artists on animal motion and still the best on the subject. Most subsequent studies have been drawn from it.

*Stillman, J. A. B.* THE HORSE IN MOTION. Boston, 1882.

Based on Muybridge observations, but Muybridge's book is greatly preferred.

## ANIMAL PROPORTION AND MEASUREMENTS

*Boone and Crockett Club.* NORTH AMERICAN BIG GAME. New York, 1939.

*Chubb, S. Harstead.* MAN O' WAR AND GALLANT FOX. New York, 1931. Museum of Natural History Publication.

Exact measurements of two of America's greatest thoroughbred racehorses, taken as three year olds at racing peak.

*Mochi, Ugo; Carter, T. Donald.* HOOFED MAMMALS OF THE WORLD. New York, 1953.

Illustrated with silhouettes of hundreds of different animals reproduced at exactly 1/32 life size. Text by one of world's authorities on mammals.

*Seton, Ernest Thomson.* ART ANATOMY OF ANIMALS. London, 1896.

This is listed here because the best information seems to me to be on measurements and proportion rather than on general anatomy. This was one of Seton's earliest works, and the drawings are not in all cases to be relied upon.

*Ward, Roland.* RECORDS OF BIG GAME. London, 1928.

The most authoritative and complete work on animals for descriptions and exact measurements. Very useful information for the artist.

## ANIMAL DRAWING AND PAINTING

*LES ANIMAUX. Ed. by A. Dayot, Lt. Chollet, H. Neuville and others.* Maison d'édition. Paris. 2 volumes.

Animals in legend, science, work, sport, art and their utilization by man. Many interesting illustrations.

*Brown, Paul.* THE HORSE. New York, 1943.

A good book of sketches of the horse showing gaits and conformation by one of America's best horse artists. Many other books on horses written and illustrated by Mr. Brown are both easily available and excellent.

*Dayot, Armand.* ANIMAUX DESCRIPTIFS. Paris, 1930. 4 volumes.

Excellent paintings, drawings, and sculpture both realistic and simplifies.

*Keller, Otto.* DIE ANTIKE TIERWELT. Leipzig, 1909. 2 volumes.

Animals as represented in art through the ages.

*Kley, Heinrich.* THE DRAWINGS OF HEINRICH KLEY. Los Angeles, 1941. 2 volumes. (Dover reprint)

Beautiful drawings by one of the great draftsmen of both people and animals.

*Knight, Charles R.* LIFE THROUGH THE AGES. New York, 1946.

One of America's great animal artists. His paintings and sculpture enrich many natural history museums.

*Kuhnert, Wilhelm.* FARBIGE TIERBILDER. Berlin, n.d.

Many good reproductions in color.

*Lydekker, Richard.* ANIMAL PORTRAITURE. London, n.d.

Fifty studies of birds and animals in full color.

*Méheut, M.* ÉTUDES D'ANIMAUX. Paris, 1911. 2 volumes.

Very good animal drawings.

*Morris, George Ford.* PORTRAITS OF HORSES. Shrewbury, N. J. 1953.

A leading American portrait painter of horses.

*Munnings, Alfred.* AUTOBIOGRAPHY. London, 1950. 3 volumes.

The work of England's best present-day painter of the horse.

*New York Zoological Society.* GALLERY OF WILD ANIMAL PAINTINGS IN THE ZOOLOGICAL PARK. New York, 1930.

Paintings by Carl Rungius, Charles R. Knight, and others.

*Schuldach, William J.* CARL RUNGUIS, A BIG GAME PAINTER. West Hartford, 1945.

A beautiful volume of Rungius' animal paintings. An animal painter of the first rank.

## GOOD PUBLICATIONS ON MAMMALS

*THE BOOK OF THE DOG.* Edited by Brian Vesey-Fitzgerald. Los Angeles, 1948.

*DISCOVERY REPORTS ON WHALES.* Discovery Committee, Colonial Office, London. Cambridge University Press, 1929.

A treatise on elephant seals and whales. Well illustrated.

*Encyclopedia Britannica.* MAMMALS AND BIRDS. Britannica booklet No. 3. New York, 1933.

A selection of articles from the 14th edition of the Encyclopedia Britannica. Profusely and well illustrated.

*National Geographic Society.* WILD ANIMALS OF NORTH AMERICA. Edward W. Nelson. Washington, D. C., 1918.

Paintings by Louis Agassiz-Fuertes.

—BOOK OF FISHES. Ed. by John Oliver La Gorce.

—BOOK OF DOGS. Ernest Harold Baynes.

Illustrated in color by Louis Agassiz-Fuertes and Hashime Murayama.

—CATTLE OF THE WORLD. Alvin H. Sanders.

Full color paintings by Edward Herbert Miner.

*Seton, Ernest Thompson.* LIVES OF GAME ANIMALS. New York, 1927. 4 volumes.

Illustrated largely with the author's drawings. Good reference on animal tracks among a lot of other things.

SMITHSONIAN SCIENTIFIC SERIES. Charles Greenley Abbott, editor.



## THE HORSE

Brown, W. R. HORSE OF THE DESERT. New York, 1929. Reprinted New York, 1947.

A much cited book on the Arabian horse. Well illustrated.

Carter, W. H. HORSES OF THE WORLD. Washington, D. C., 1923.

Originally appeared as "The Story of the Horse" in the National Geographic Magazine, volume 44, 1923. Well illustrated in black and white and color.

Davenport, Homer. MY QUEST OF THE ARAB HORSE. New York, 1909.

Derhardt, R. M. THE HORSE OF THE AMERICAS. Norman, Oklahoma, 1947.

Harper, M. W. MANAGEMENT AND BREEDING OF HORSES. New York, 1913.

A book I have found very useful for general information on all breeds.

Hervey, John. THE AMERICAN TROTTER. TONY NO, 1947.

An excellent reference book on the standard-bred.

—RACING IN AMERICA. New York, 1944.

Lamb, A. J. R. HORSE FACTS. Chicago, 1948.

Simpson, George Gaylord. HORSES. New York, 1951.

The story of the horse family in the modern world and through sixty million years of history. Doctor Simpson heads the Department of Paleontology at the American Museum of Natural History. Written to be readily understood by the layman. No other book covers the subject so fully or authentically.

Sporting Life and Biographical Press. BRITISH HUNTS AND HUNTSMEN. London, 1909. 4 volumes.

A vast collection of photographs of British horses, hounds and huntsmen.

Vesey-Fitzgerald, Brian, editor. THE BOOK OF THE HORSE. London, 1946.

Text in places is at variance with accepted fact, but beautifully illustrated.

Most horse breeding societies publish periodicals and pamphlets on their breeds, and such magazines as the *Thoroughbred Record*, the *Harness Horse*, *Horse World*, to mention a few, are good. The departments of agriculture, state and federal, also publish material. Information can be obtained from the Horse and Mule Association of America.

## DOVER BOOKS ON ART INSTRUCTION

- PRINCIPLES OF PATTERN DESIGN, Richard M. Proctor. (26349-5) \$8.95
- PATTERN DESIGN, Archibald H. Christie. (22221-7) \$9.95
- PRACTICAL PORTRAIT PAINTING, Frank Slater. (Available in United States only) (26133-6) \$7.95
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- DESIGN YOUR OWN REPEAT PATTERNS, V. Ann Waterman. (25132-2) \$4.95
- PRACTICAL GUIDE TO ETCHING AND OTHER INTAGLIO PRINTMAKING TECHNIQUES, Manly Banister. (25165-9) \$7.95
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